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ABSTRACT

Recognition of the need for behavioral science input into medical education has come about partly because patterns of health care are changing in this country and the traditional disease-oriented curriculum does not prepare students for the new roles they will play in society when they become physicians. Students must master not only tremendously expanded bodies of scientific knowledge, but must also understand the behavioral components of health and illness, and complexities of health care as an institutional process, the variety of settings in which a physician may choose to practice, and the methods of bringing about social changes that will strike at the roots of medical problems. Thus, the National Institute of Child Health and Human Development sponsored four conferences on Behavioral Sciences to define specific contributions the behavioral sciences can and should make to medical education in the areas of knowledge, attitudes, skill and research. They discussed the educational process and the most effective ways of integrating behavioral science material into medical education. They identified major behavioral science components of medical education, and they examined the various administrative structures through which the behavioral sciences are currently offered in the medical schools. (Author/HS)

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behavioral sciences & medical education

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a report of four conferences

National Institute of Child Health and Human Development

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FOREWORD

As physicians find themselves facing ever more complex problems which cannot be solved by traditional techniques alone, they are drawing more and more heavily on the concepts, methods, and findings of other disciplines to help them find solutions. Many of the problems concerning both the expansion of clinical expertise and the improved management of health services involve areas of scientific knowledge within the domain of the social and behavioral sciences. In an effort to stimulate contact between medicine and the social sciences, many medical schools now offer joint appointments to faculty members of university departments of sociology, anthropology, psychology and related disciplines. A few schools have established departments or divisions of behavioral science.

This partnership is still in a period of adjustment, and considerable gaps in understanding exist between the clinicians and the behavioral scientists. To encourage productive dialogue which can lead to better integration of these important bodies of knowledge which have so much to contribute to medical education, the National Institute of Child Health and Human Development asked a group of medical educators, behavioral scientists and students to meet together in a series of four conferences. These were held in May 1969, October 1969, May 1970 and November 1970. They were a logical responsibility for the NICHD since its mandate is to conduct and sponsor research and training concerned with the whole person, from conception to old age, including both the biomedical and the behavioral aspects of human health.

These meetings marked the first time that a sizable group of people representing clinical medicine and the behavioral sciences had gotten together on repeated occasions to discuss major issues relating to the contribution of the behavioral sciences in medical education. The series grew out of recognition by many people that medical education in its present form does not prepare students adequately for the responsibilities they will face as physicians.

Dr. Richard W. Olmsted developed the idea for the conference series and chaired the first two conferences. Drs. Donald A.

Kennedy and Hans O. Mauksch served as co-chairmen of conferences three and four.

Responsibility for planning the four conferences was shared by Dr. Donald A. Kennedy, Dr. Sol Kramer, Dr. Charles E. Lewis, Dr. Hans O. Mauksch, Dr. Ivan N. Mensh, Dr. Richard W. Olmsted, Dr. Evan G. Pattishall, Dr. Leo G. Reeder, Dr. Edward J. Stainbrook, Dr. Joseph Stokes III and Dr. Nathan B. Talbot.

Three of the conferences were held at Allenberry Inn, Boiling Springs, Pennsylvania. The fourth was held at the Arlington Hotel, Hot Springs, Arkansas. Funding for the first, second and fourth conferences was provided by the National Institute of Child Health and Human Development and for the third by the Division of Physician Manpower of the Bureau of Health Professions Education and Manpower Training of the National Institutes of Health. Dr. Donald M. Pitcairn represented the Bureau at the third and fourth meetings. Dr. Joseph M. Bobbitt and Miss Betty Barton represented NICHD in the planning efforts. Individual reports of the conferences and this summary publication were written by Mrs. Leora Wood Wells.

Rather than being the end of an effort, the final meeting of the series marked the beginning of a new phase of the work of the conference group. Many of the concepts and issues explored in previous meetings were sharpened in terms of specific action proposals.

Among these was formation of the Association for Behavioral Sciences and Medical Education to carry forward implementation of the educational and social goals delineated in the four meetings.

Dr. Richard W. Olmsted
University of Oregon
Dr. Donald A. Kennedy
Harvard University
Scientific Editors

CONTENTS

FOREWORD iii

CONTENTS v

FOCUS OF THE CONFERENCE SERIES 1

CONTRIBUTIONS OF THE BEHAVIORAL SCIENCES TO MEDICAL EDUCATION 5

BEHAVIORAL SCIENCE RESEARCH AND MEDICAL EDUCATION 22

CHANGING PATTERNS OF HEALTH CARE: IMPLICATIONS FOR MEDICAL EDUCATION 36

EDUCATIONAL PROCESS 60

BEHAVIORAL SCIENCE COMPONENTS OF MEDICAL EDUCATION 103

BEHAVIORAL SCIENCES IN MEDICAL SCHOOLS: STRUCTURAL CONSIDERATIONS 144

DIRECTORY OF PARTICIPANTS 161

INDEX 169

FOCUS OF THE CONFERENCE SERIES

Precisely what knowledge does a pediatrician need if he is to be a good doctor? What does an orthopedic surgeon need to know? An ophthalmologist or a family physician? What skills, attitudes and information should physicians have acquired by the time they complete medical education? What part of this should they have acquired during premedical training? What is the overlap of skills and knowledge that each category of physicians needs?

The multidisciplinary group of behavioral scientists, physicians and students who met together in the four conferences on Behavioral Sciences and Medical Education sponsored by the National Institute of Child Health and Human Development examined such questions as these from many points of view. They defined specific contributions the behavioral sciences can and should make to medical education in the areas of knowledge, attitudes, skills and research. They looked at changing patterns of health care and their implications for medical education. They discussed educational process and the most effective ways of integrating behavioral science material into medical education. They identified major behavioral science components of medical education. Finally, they examined the various administrative structures through which the behavioral sciences are currently offered in the medical schools.

The participants pointed out that neither behavioral scientists nor clinicians in the medical schools have clear ideas about what physicians in practice actually do, what they need to know, or how they should perform; therefore, the medical schools are not entirely sure what type of graduate they are trying to create.

Even assuming that all the areas of behavioral science knowledge the physician should have at his fingertips can be identified, should any one physician be expected to cope with all facets of behaviorally-generated problems of modern medicine? It is probably unrealistic to assume that he could do so, the participants said. If we start listing all the things we want the graduate to be—diagnostician, decision maker, disease curer, medical technician, health caretaker, personal counselor, medical scientist, social change agent—we will end up asking that each physician be a Renaissance man. This is not feasible. The medical curriculum must be individualized so that each student can sort out what will be useful to him in the career he plans.

Recognition of the need for behavioral science input into medical education has come about partly because patterns of health care are changing in this country and the traditional disease-oriented curriculum does not prepare students for the new roles they will play in society when they become physicians. Students must master not only tremendously expanded bodies of scientific knowledge but must also understand the behavioral components of health and illness, the complexities of health care as an institutional process, the variety of settings in which a physician may choose to practice, and the methods of bringing about social changes that will strike at the roots of medical problems.

Each of the four conferences included 45 to 55 participants. A high percentage attended all of the meetings, but in each conference, enough new people were added to provide fresh perspectives. The diversity of experience among the participants had a great deal to do with the outstanding level of productivity of the meetings. The participants included pediatricians, sociologists, epidemiologists, psychiatrists, medical economists, anthropologists, internists, medical students, cardiologists, physiologists, nurses, psychologists, pathobiologists, ethologists, community health workers, obstetricians, medical educators, endocrinologists, and various combinations and subspecialties of these disciplines. What all of them had in common was an interest in medical education.

Multidisciplinary backgrounds were common; many of the participants had started their careers in one discipline and picked up advanced degree work in one or more additional disciplines as they felt the need of this training in their work. Several hold both M.D. and Ph.D. degrees. Many of the participants hold joint appointments in university departments and medical schools; others maintain their original disciplinary identification entirely within medical or nursing schools. Some are in departments of the behavioral sciences; others are in departments of psychiatry, social perspectives, pediatrics and human development, human medicine, epidemiology and public health, or community medicine.

Association for Behavioral Sciences and Medical Education

As the conference series progressed, it became apparent that the four meetings represented the first stage of a process of collaborative thinking about the future of the behavioral sciences in medical education. The behavioral sciences are in the fortunate position of being at the beginning of their major impact, the participants said. Most behavioral science departments are still in their formative stages, and additional departments will probably come into being within the next few years. Many of the participants stressed the need for continuing communication with their colleagues in other medical schools during this crucial period.

They also emphasized the need for behavioral science program and curriculum guidelines to be developed from the base of experience already available. Many models for teaching behavioral sciences in the medical schools need to be developed, and this should not be left to chance. The conference series accomplished an enormous amount of spadework, but much remains to be done.

The idea of creating a permanent interdisciplinary Association for Behavioral Sciences and Medical Education evolved gradually during the meetings and was brought to fulfillment during the fourth conference. Most participants agreed that the general mission of the new organization should be to establish a partnership between physicians and behavioral scientists through which the quality of behavioral science inputs into medical education can be improved. They said the organization should be task-oriented but should be left open-ended, moving immediately into what it can do now and undertaking additional activities when feasible.

The initial tasks of the organization should be:

- to develop organizational guidelines
- to obtain funding
- to plan and arrange further conferences
- to develop a position paper which draws upon the proceedings of the four conferences, incorporates positions expressed by the conference group, includes the findings of a factual survey of how the behavioral sciences are being presented in the medical schools of the United States and Canada, clarifies the goals of the behavioral sciences in medical education and their relationship to the improvement of the health of man, and suggests alternatives that could be followed by medical schools that wish to set up or improve departments of behavioral science
- to develop mechanisms for a clearing house for the exchange of information about new developments in the behavioral sciences and medical education.

Members of the conference group elected a steering committee of behavioral scientists, physicians and students to assume responsibility for developing the new organization. Five subcommittees were established to undertake the tasks outlined above.

There was strong consensus that the group should continue to meet at regular intervals to examine the goals set at prior meetings and analyze how much progress has been made toward them, where the failures and bottlenecks have been, and what additional goals need to be established. It is not enough just to plug the behavioral sciences into medical education and the existing medical care system, the participants said. Medicine is still avoiding a total health effort, as opposed to a medical effort. This must change. The important question is how the behavioral sciences can be used to prepare physicians not only to deal with the vast residue of medical-social problems but to plan and implement changes that will preclude the problems. At every level, from medical education through the delivery of health care, there must be basic changes that will create a totally new and more effective health care system that makes full use of the knowledge and skills of many disciplines.

CONTRIBUTIONS OF THE BEHAVIORAL SCIENCES TO MEDICAL EDUCATION

> Most students come into medical school with a clearly crystallized idea that they want to be physicians . . but they cannot function fully as physicians from an isolated base that ignores behavioral and social implications.
>
> What the medical student needs to learn from the behavioral scientist is the conceptual framework that will reinforce his clinical knowledge.

The education of physicians must include behavioral as well as biological concepts and skills. However, a close working relationship between the behavioral sciences and medical education is still a relatively new phenomenon. Confusion therefore exists about what behavioral scientists do. This confusion diminished considerably as the conference groups hammered out descriptions of the kinds of knowledge and skills behavioral scientists are best qualified to supply. These contributions are made in three ways, they said: through teaching medical students; pursuing medically related research; and providing consultation to administrators of medical schools, teaching hospitals and health agencies and to physicians and other health personnel.

There is no such thing as a behavioral science discipline. There are anthropologists, sociologists, psychologists, behavioral biologists and medical economists; and there are a half dozen breeds within each of these disciplines. In addition, the terms "behavioral scientist" and "social scientist" are often used interchangeably. Members of all these disciplines have certain common concerns, but they often do not understand each other's work any better than the biochemist understands the work of the neurosurgeon. At the present time, the skills represented by psychology, social psychology, cultural anthropology, and sociology need to be included in medical education; and as programs evolve, the skills of other disciplines may also need to be included. Some members of the group favored a broader definition which would include the humanities. The group emphasized that these disciplines should be considered separate from psychiatry. However, they said, there is no need to develop a formal taxonomy of behavioral scientists and label each one. What is important is to concentrate on the jobs to be done and who has the skills to do them rather than on what name tags people wear.

Behavioral scientists are trained to look at problems from a broad perspective. In medical settings one of their most significant functions is to look at such questions as:

- How is health or ill health perceived by patients and by doctors?
- How and when and why do people go to doctors?
- How do they find health care facilities?
- How do they get there?
- Do they really get the care they need?
- Do they accept it?
- Do they get satisfactory results?
- What are the social, psychological, cultural and economic characteristics and qualities of patients that affect the kinds of health care they want or need?
- What sorts of instruments exist to measure the characteristics and qualities of medical students that might help to guide their career choices?
- What sorts of physicians are most effective in dealing with what sorts of patients?

It is important that the behavioral sciences not be oversold, the participants all agreed. There is some danger that physicians will have unrealistic expectations of what behavioral scientists can achieve. This happened with both mental health and child development; they were oversold as cure-alls, and it has taken a long time for their realistic potentials to come into focus. The basic and clinical faculties tend to view behavioral scientists as technicians to be called in to do specific jobs such as developing a planning paper on how to form a group practice. Clinicians tend to want instant answers, and they become impatient with any methodology that requires a slow and careful development of a concept or plan.

Many medical faculty members seem to think of the social or behavioral scientist as the person responsible for providing the sense of humanity and compassion and personal relationship that is the hallmark of a good physician. This is not solely the responsibility of behavioral scientists. There also seems to be an assumption on the part of physicians that behavioral scientists are by definition agents of social change. This is not automatically so. As in other professions, some individuals are change agents and some are not. Many of them have been no better trained for this function than physicians are. The same could be said of lawyers or legislators or any other professional group; some are change agents, some are not.

Range of Interests and Skills

Behavioral scientists will have the greatest positive impact in medical education and medical care by functioning fully within their own range of interests and professional skills. Some of these are:

- to supply theoretical knowledge about human behavior and assist in application of this knowledge in health care
- to recognize evolutionary processes and the similarities and differences in physical structure and form that have appeared throughout the world over many generations and relate these to the developmental and medical problems physicians will encounter in practice
- to relate the physician's concern with critical stages of development to the developmental life arch from birth to death in various population groups, particularly as this relates to such phenomena as preventive health care
- to make students aware that the patient is a human being with a family, with feelings, with problems, with a job
- to help the student, the physician and perhaps the patient himself move beyond the disease concept to become more sensitive to the social, cultural and psychological conditions which influence the etiology of the patient's condition and the degree to which he will recover from a specific injury or illness
- to enlarge the student's understanding of family dynamics
- to highlight short and long range consequences of diagnosis and treatment for the patient and his family
- to familiarize the student with lay and folk definitions of health and illness and how these differ from medical definitions
- to identify the health-seeking behaviors people show in response to the way they perceive the state of their health
- to provide information about the determinants, processes and outcomes of disease and the way society is organized to treat it
- to show how this information can be presented to medical students in a way that will create physicians who are not merely technicians but fully developed professionals who can make use of the behavioral science knowledge they have absorbed
- to look at the social group and the environment as a unit of analysis as well as at the individual patient

- to be concerned about the etiology of disease and the effects of different types of treatment on people in the aggregate; for example, rather than being concerned with coronary disease, ulcers or arthritis, the behavioral scientists may be concerned with such concepts as smoking diseases, city diseases or poverty diseases that will inevitably occur if certain social conditions exist
- to offer medicine a methodology for studying problems that traditional medicine does not have the equipment to study, such as human social organization and the responses of individuals and society to various types of disease and treatment patterns
- to look both at social factors as variables in disease processes and at the effect of disease processes on social structure and social behavior
- to elucidate the epidemiology of morbidity and mortality
- to examine the ecological consequences of population growth and change
- to identify statistical associations in relationships among personality, culture and physiology which may be significant in predicting, preventing or controlling medical problems
- to introduce pertinent social and behavioral science data into diagnosis and treatment
- to provide a set of conceptual hooks which medical students can use to synthesize information for clinical diagnostic purposes, such as how theories and generalizations are developed and what kinds of studies are needed
- to illuminate the processes involved in patient/professional interrelationships
- to contribute to improvement of these relationships
- to impart techniques of observation and intervention necessary for work with individual patients, including both verbal and non-verbal communication skills and interaction processes
- to shed light on problems of patient noncompliance and teach students how to bridge the gap between what they write on prescription pads and how well patients follow instructions
- to identify where and why therapeutic effectiveness breaks down
- to clarify the role of the physician as participant-observer in the lives of patients and show how this role can be used to influence individual or community patterns of behavior
- to make students aware of the extra-medical influence of the physician in the community
- to communicate techniques of working with small groups of people

- to help medical students get acclimated to their relationships with patients as they enter their clerkships
- to teach physicians and students how to work in a team relationship with members of other disciplines
- to participate in developing better organization of health care systems
- to develop and test innovative systems of health care in light of behavioral science understanding of social and cultural patterns and influences
- to demonstrate ways of dealing with problems of community medicine and key these into realistic plans for action
- to increase the likelihood of community acceptance of new programs through application of the findings of anthropological and sociological studies which have demonstrated factors affecting acceptance
- to serve as ethnic consultants to help physicians and medical students read cultural signs correctly in settings where the lifestyles of patients differ from their own, so that they can develop appropriate therapeutic approaches
- to identify fads and fashions in health services which affect the well-being of patients
- to assess the availability, accessibility and relevance of existing health care services
- to analyze the effectiveness of health settings and organizations, including role alignments and subsystems
- to make medical students aware how health resources are allocated in a society or a community and what goals or priorities these reflect
- to cast light on decision making processes in health care
- to show how various interest groups predict, stimulate and influence demands for emphasis on certain medical problems such as cancer or heart disease
- to show how changes in various health-related power structures come about
- to identify social and cultural changes involved in technological development and innovations in medical practice
- to generate constructive efforts to increase the pool of qualified health manpower
- to identify factors affecting career choices
- to identify the kinds of personalities that are attracted into various specialties
- to help relate admission procedures in medical schools more realistically to health manpower needs

- to shed light on the social and cultural values, norms and ideologies of medical schools
- to help improve the quality of both undergraduate and graduate medical education
- to improve certification procedures
- to provide behavioral science perspectives in the planning and implementation of research and teaching programs in medical education.

Historical Perspective

Some confusion about the identity of behavioral scientists and the behavioral sciences has grown out of their early ties with psychiatry. All during the 19th century, medicine drew upon a tremendous amount of informal, common sense knowledge about the interrelationships of biology and behavior in health and disease. In attempting to deal with the determinants of illness and the response to it, medical schools taught in terms of persons, functions, and knowledge organized in specific social places to do specific things.

During the time that psychiatry was evolving out of the 19th century into the 20th, with the concomitant evolution of psychoanalysis, most behavioral science knowledge reported in the literature was developed outside the medical school setting. Medicine and the behavioral sciences did a magnificent job of ignoring each other. Medicine was preoccupied with biological breakthroughs and various kinds of chemical and mechanical interventions. Similarly, the behavioral sciences, methodically studying systems of human behavior, somehow overlooked the extraordinarily important interrelationship of behavior and biology.

During the 1940's, some change began to take place, and by about 1950, some recognition of the role of the behavioral sciences in medical education began to grow. For the most part this consisted of individuals being invited by individuals on an ad hoc basis, or perhaps visiting behavioral scientists coming into medical schools for a year or two to see what they might see or do. This made them essentially consultants and importers of knowledge. They focused their consultation and their behavioral knowledge on understanding the causation, process and outcome of disease.

This knowledge that had been developed extra-medically could meet the needs of medicine only up to a point; it could not answer questions that were emerging in the areas of applied medicine. Hence, a second wave of innovation began through which efforts were made to draw the behavioral sciences into a closer and more direct relationship with medicine. For example, the Russell

Sage Foundation residency program began to provide opportunities for behavioral scientists to be brought into the medical schools to explore research and teaching questions. This was an extraordinarily significant phenomenon. However, physicians in the medical schools were not at all sure what to do with these strange animals they had invited into their midst; so they often tucked them under the wing of the departments of psychiatry.

Gaps in Interdisciplinary Understanding

The behavioral scientists found they were not entirely welcome in their new environment. Although medical schools have had departments of psychiatry for many years, genuine acceptance of psychiatry by individual members of the medical faculty is often lacking even today. This attitude carries over not only into the way physicians feel about behavioral scientists who are members of departments of psychiatry, but is also projected into the way psychiatrists react to the presence of behavioral scientists. Their attitude often seems to be, "Why all this talk about behavioral science? This is just psychiatry you are talking about; and psychiatrists, as trained physicians, are the only ones who should be teaching such topics to medical students."

As of the present time, a clear pattern of inclusion of behavioral sciences in medical education has not been established. A large proportion of the behavioral science activity in the schools is still under the departmental sponsorship of psychiatry, public health or preventive medicine. This limits both the image of the behavioral sciences and the scope of their activities. For example, when the behavioral sciences are offered through the department of psychiatry, students tend to assume that any variation of behavior they observe is an indication of mental illness. Behavioral sciences should be viewed in a broader context, as basic to all areas of medicine. They should be integrated into the spheres of knowledge concerned with human biology.

This is beginning to happen. Members of many medical, scientific and behavioral disciplines now recognize that the behavioral sciences have unique and fundamental contributions of their own to make to medical education.

However, difficulties in defining these contributions and how they should be incorporated into medical education remain, largely because of differences in viewpoint of biologically oriented physicians and socially oriented behavioral scientists. The biologists often seem to be saying that people are nothing but bodies that get humanized and socialized incidentally. The behavioral scientists, on the other hand, often place a great deal of emphasis on humanization and socialization and the way that experience organizes and maintains the body, yet seem to lack real understanding of the fundamental ways that this affects and is affected by biological process.

Another factor in the lack of understanding of what behavioral scientists do is the difficulty medically oriented people have in understanding abstractions. They are used to dealing with concrete, clinical issues, and they find the concepts of other disciplines nebulous and hard to grasp. Perhaps because of this emphasis on the clinical approach some of the early "departments of behavioral science" were primarily departments of brain process and functioning. When we talk about the behavioral sciences now, we mean the whole gamut of our conceptualization of man.

A third factor which hinders full understanding between behavioral scientists and physicians is that physicians work with people primarily on an individual basis, while behavioral scientists deal primarily with populations and the conceptual and social contexts which affect people. Most doctors become doctors because they want to discover what is singular about the case of Mr. X and what they can do to help him. With the exception of clinical psychologists, most behavioral scientists are more interested in generalizations about what makes people tick than in finding solutions to the problems of individual patients. For example, they would be more concerned with identifying and changing the factors that cause illegitimacy to be high among certain population groups than in trying to explain why a particular girl was about to have an illegitimate child.

Physicians in the medical schools often do not understand this. They call a behavioral scientist into conference with students to discuss a patient's case, and they say, "OK, that's your bailiwick; in the next ten minutes, explain to the medical students here the psychological, social and motivational factors in this girl's illegitimate pregnancy." This can't be done, so the medical students and the clinicians say, "These fool behavioral scientists; why don't they come out of their ivory towers and get down to the ground level with us?"

Partly as a result of these gaps in understanding, behavioral scientists are often perceived as a threat in the medical schools. The participants tried to analyze why this is so.

The behavioral scientist in the medical school is in somewhat the same position as the housepainter who comes in to redecorate an apartment, a participant said. For months housewives beg and plead with the decorator, and he feels very wanted because all these lovely ladies keep asking him to come in and paint their homes. Finally he arrives—much invited, much welcome. But the very nature of his activities is disruptive. He lifts up the carpets and forces the house into disarray. He becomes an invader, a nuisance.

The "decorator syndrome"—to be invited and at the same time felt and experienced as a nuisance—might be a model for analyzing the role of the behavioral scientist in the medical setting. How does he cope with the reality that those who invite him are not only his hosts and colleagues but often the subjects of his study?

Clinicians in the medical schools often have the feeling that behavioral scientists want to scrutinize them like some kind of rat colony, other participants added. They get an impression of the behavioral scientist as someone who sits off and makes observations on how the physicians and the patients interact with the medical care system. They hear all about the weakness of the system, and how hospitals are oriented toward the medical staff rather than the patients.

Inherent in these statements is an implication that behavioral scientists are agents of social change. This makes them a threatening group. It is often assumed that the more understanding behavioral scientists can contribute to the problems of medical education and the medical care system, the more acceptance they will gain. This is a spurious hope, since they are often shedding light on problems the medical administrators and faculty would prefer not to know about and would like to ignore but can't. As long as they study things like the responses of patients to illness and student receptivity to instruction, they are not seen as a threat. But as soon as they begin to study or discuss such issues as power relationships in medical resources, community power structures, or power figures as role models, they are seen as disruptive influences. There is an element of projected anticipation of aggression in this. One meets one's own aggression coming back from its object.

Physiologists and internists and surgeons do not want their own foibles and weaknesses exposed. Nor do they want to study community problems or problems of hospital organization of faculty-student relationships, and they wouldn't know how to do it if they did want to. But for various social reasons, such problems are exerting tremendous pressures on the institutions of medical education and medical practice to change their dominant patterns of behavior. Therefore it has been decided that somebody must deal with these pressures. So the anthropologist or sociologist or psychologist is brought in to serve this perfectly legitimate function but finds himself unaccepted and resented. The very people who have sought his help in reducing pressures and bringing problems under control project on him all the hostility they feel toward the problems and pressures in their environment.

This sort of resistance often leads to a dichotomy between knowledge and practice. In one medical school, for example, a sociologist was called in to develop a well-documented study which would identify the causes of conflicts between department heads, faculty and students that were interfering with the achievement of medical education goals they all shared. He was praised for the quality of his report, but the report was never distributed or even discussed thoroughly, and the recommendations it contained about certain changes in the policy-making structure of the school were ignored by those in power. As a result, the problems intensified until the school was faced, five years later, with a full-fledged strike of students which was directed toward bringing about some of the very changes the sociologist had suggested.

Sometimes the lack of action stems from the unwillingness of the behavioral scientist himself to carry through on what he has discovered. People love to think of knowledge as truth or knowledge as beauty; but they are very uncomfortable in thinking of knowledge as power. So behavioral scientists do their scientific studies, and they see the implications of what they have stirred up; but they feel it is somebody else's responsibility to implement the findings. It therefore falls to the clinicians and administrators to develop the system in a way that will bridge the gap between knowledge and implementation; and they are often either insufficiently concerned, resistant, or not very effective in using the power that this scientific knowledge has provided. Consequently, the behavioral scientist may, at times, be perceived as a threat not because he is an instituter of change but because he fails to bring about change. Many members of medical school faculties are frustrated and angry because they feel they are not providing the kind of medical education that is needed. They turn to the behavioral scientists to help them bring about change, but they become fearful, either because they are not sure this can be achieved or because they do not want the responsibility for change dumped back into their own laps.

Harmonious Working Relationships

In order to clarify the conditions under which behavioral scientists can make their maximum contributions to medical education, the conference groups directed a considerable amount of discussion to what one of them called "the care and feeding of behavioral scientists."

One of the requirements stressed most strongly was the opportunity to do research. The behavioral sciences have a particular contribution to make in basic research keyed to the vibrant questions of medicine. The behavioral components of the management of disease, the problems of human interaction which affect the diagnosis and management of disease, the relationship of deviant behavior to psychological and physical disease, the relationship of crucial social problems to health, and the complex medical-social organization necessary for good health care are examples of the kinds of research in which medicine and the behavioral sciences need to be closely allied. The content and methodology of such projects are discussed in more detail in the next chapter.

In regard to the medical school as an environment for behavioral science research, the participants said that some physicians seem to assume that behavioral scientists come to the medical schools primarily because they want to participate in training doctors. More often, they come into a medical school, just as many members of the medical faculty do, because this location provides opportunities for the kinds of research they are interested in doing and that they cannot do as well in any other setting. There is nothing wrong with this as a motivation for joining a medical school faculty, because the greatest value of a behavioral scientist as a teacher and as a participant-observer in clinical management of patients stems from his research-based knowledge of how human beings act and interact.

Much of the medically related research of behavioral scientists can be done in the medical school itself, but for one of the disciplines—anthropology—the research emphasis and method requires that there must be permission and explicit support for field work. Anthropological research typically requires geographical distance, and anthropologists may need to disappear from the academic scene for weeks or months at a time. Although this is important to the anthropologist's sense of disciplinary identity, it is not a form of self gratification; it is his essential intellectual strategy for learning about human nature through cross-cultural comparisons.

What he studies in the field often greatly enriches the contribution he can make in the medical school, whether his research is in some remote country or within the United States. For example, one anthropologist spent three days a week for a year and a half studying the folklore, superstitions and health concepts of residents of a depressed county in Florida. Later, when the medical school decided to develop a community health program, this county was the logical place to locate it because so much pertinent information was already available.

A second requirement, if behavioral scientists are to contribute fully to medical education, is the time, opportunity and support to become thoroughly familiar with the culture of medicine. The medical school and medical life represent a culture very different from the one in which behavioral scientists are trained. When they become members of medical school faculties, therefore, they need to understand this new culture so they can tune in on what medical educators are concerned about. Behavioral scientists are students of social systems. In the medical setting they need to study the system in order to become useful consultants on organizational patterns and the planning of new and better methods of medical education and patient care. No matter how competent a behavioral scientist is, it may take as long as two years before he becomes an effective integrator, teacher and researcher in the medical setting.

A third necessity in productive association of behavioral scientists with medical education is peer group status with their medical colleagues. There must be full commitment on the part of the schools toward involving the behavioral scientists as first class citizens in the key committees and decision-making processes of the schools, particularly in relation to curriculum development and educational policy. It is important that behavioral scientists be offered places in the power structure of the medical school and the university which will be personally satisfying to them. In every school there is a central power structure which makes policy decisions. Then there are several satellite power structures. Any physician who joins the staff of a medical school in a senior position hopes he will join the central power structure, but with few exceptions, this opportunity is not open to behavioral scientists in the medical schools at the present time.

Physical arrangements in the schools affect the degree to which behavioral scientists are accepted as part of the decision making bodies of the medical school. They should be centrally located, easily accessible to students and colleagues; not stuck off in Annex #3 several blocks away. Only by working together closely can behavioral scientists and members of the medical faculty learn to understand and appreciate each other's contributions. They should teach jointly, do joint research, serve together on admissions committees and in other parts of the power structure of the medical schools, and be in daily contact with each other.

Participants of both medical and behavioral science disciplines pointed out that it is important to get away from prejudice against behavioral scientists being directly involved in patient care. It was evident that neither the physicians nor the behavioral scientists had any desire for the behavioral scientists to assume direct medical functions in relation to patients. Physicians don't want behavioral scientists to have licenses to deliver babies, and behavioral scientists have no desire to do so. Obviously, behavioral scientists should not be involved in procedures that require use of technical clinical skills; and they should take care not to develop the "white coat syndrome." Biochemistry, anatomy and physiology have perhaps over-identified with medicine so that there is a need for their relationship to medicine to be reevaluated and reintegrated into medical education in a different way. There is no need for the behavioral sciences to repeat this same evolutionary process. But in areas like community medicine and certain other aspects of patient care, the decision making responsibilities should be shared by the behavioral scientist and the physicians.

For example, in a case where the health of a child depends upon improvement of the home environment, the physician and his behavioral science colleagues should be equally involved in the "treatment" of the patient. Treatment does not mean simply prescribing appropriate medications or diet. Most of the cases physicians encounter today are far too complex to be solved that easily. Treatment means marshalling all the skills and all the knowledge of many disciplines that can have a corrective influence on the problem at hand, and this by definition involves physicians and behavioral scientists in a true colleague relationship.

In the early 1950's, the nursing profession suddenly became very much interested in the social and behavioral sciences, and behavioral scientists moved into a teamwork relationship with nurse educators and nurse practitioners at the bedside of the patient. Now, 15 years later, the behavioral sciences have been absorbed into the nursing curriculum to such an extent that this close relationship is no longer necessary. Fifty percent of the nurses who receive doctoral degrees take them in sociology, psychology, or anthropology. Because of the greater level of knowledge of the behavioral sciences within the nursing profession, it has been possible for the behavioral scientists to move away from their direct involvement in patient care and give more emphasis to experimental and applied research. They have moved back from an emphasis on the selection, synthesis and integration of knowledge for purposes of use in nursing to an emphasis on the equally important area of creating new knowledge.

Physicians, for the most part, are still largely unfamiliar with the core knowledge of the behavioral sciences. That is why, at the present time, behavioral scientists need to participate more fully in the clinical management of patients. But it is likely that the same pattern will be repeated in medicine that was followed in nursing; after the knowledge gap is closed, there will again be some retrenchment and balancing of the working relationship between medicine and the behavioral sciences.

As the emphasis in medicine changes from disease to health, the behavioral science components are becoming increasingly important in patient care, particularly in relation to problems like alcoholism, drug abuse, accidents and child abuse. In some ways, behavioral scientists are better equipped to talk about health and normality than are physicians. Probably the most important contribution of the behavioral scientist to patient care is to supply this basic knowledge. His function is not to say to the physician, "Handle the situation this way," but to provide the underlying knowledge of human behavior which will enable the physician to make appropriate decisions about clinical management of his cases.

A fourth requirement for harmonious working relationships is closely akin to the question of peer status. If behavioral scientists are to become effective contributors in medical education efforts, the communication gap between them and their medical colleagues needs to be closed. A sociologist parodied an abortive attempt to do this:

> I can imagine talking to some of our faculty in medicine or surgery, and they say, "Well, John, what are you fellows over in social sciences doing these days?" And we modestly reply, "We are providing a broad theoretical framework which makes the education of the medical student meaningful to him."
>
> Then there is a long pause. And there is an "Oh," and probably no further conversation in that particular context.

Learning how to understand each other and work together is a dual responsibility involving efforts of all disciplines to transcend their individual interests. Both must listen and both must learn. To communicate effectively what they have to offer medical education, behavioral scientists must first learn to understand the central needs and concerns of their medical colleagues. The physicians, in turn, must become familiar with the language, concepts and skills of behavioral scientists.

House officers are the principal role models of medical students. Some way needs to be found to bring them into a stronger behavioral science orientation so that students will see behavioral sciences as an important part of the continuum. At the same time, the behavioral scientists need specific training that will equip them to become truly medical-behavioral scientists who can interact meaningfully with their medical colleagues and with medical students.

In order to emphasize the relationship of behavioral science material to medicine so that students will be responsive to it, the behavioral scientist must give up some of his professional self-image. When he realizes he must stop talking about concepts and theories and relate his material to specific medical problems, he is apt to feel that he is taking short cuts and being too pragmatic in approach. He feels like less of a sociologist or less an anthropologist or psychologist. This is one thing that makes it difficult to recruit behavioral scientists into medical education. However, this feeling of distortion of professional commitment is usually overcome after the behavioral scientist has taught in the medical school for a time, because he begins to see the importance of what he is contributing to medical education.

However close the working relationship with their medical colleagues, behavioral scientists also need opportunities for contacts with colleagues in their own disciplines. Isolation from professional colleagues is one of the biggest adjustment problems of the behavioral scientists in the medical school. This is particularly acute if the medical school is physically separated from the university departments.

Behavioral scientists develop a certain syndrome when they are away from their own "tribes" for long periods of time, an anthropologist said. They either "go native" and turn into imitation physicians or they become frustrated and begin to perform poorly. To prevent this, they need easy access to members of their own disciplines, either through joint appointments in medical schools and university departments or through some other regular and continuing arrangement.

If they are to have a major impact in medical education, behavioral scientists need direct contact with medical students. At the present time, contact is astonishingly limited in some of the medical schools. In one, for example, there are more than 40 behavioral scientists on the faculty including those who have joint appointments in other departments, but the direct teaching contact of each of them with medical students is limited to a few hours per year.

Behavioral scientists need access to graduate students in their own disciplines as well as to medical students. To keep the disciplinary perspective that is an essential part of what they can contribute to medical education, they need to be connected with the continuing flow of responsibility for training the next generation of behavioral scientists as well as physicians.

If students are to be recruited into specialties like medical sociology and medical anthropology, the training is going to have to be offered in the medical school setting, otherwise they will drift away into non-medically oriented disciplinary specializations. At one university, for example, 18 candidates who were working toward degrees in medical sociology received their training in the university rather than in the medical school. When they selected their dissertation topics, no one centered his proposal around medical sociology in the true sense; they chose topics like occupations and professions, deviancy, social organization—but nothing that emphasized the medical aspects of sociology. They simply hadn't been exposed to enough medicine to recognize the problems they might study.

It is becoming increasingly clear that behavioral scientists have multiple roles to play in the medical school. When they first became part of medical education, they had few guidelines for what these roles should be, so they started with the obvious needs. They did observation and classification and basic research. Then a slight shift began to take place. They began to think and speak of alternative ways of dealing with the problems under study. Then they moved a step further into evaluation of the possible alternatives. From there, it was only one more step into applied research, when they began saying to their medical colleagues, "This is the most feasible alternative, most likely to produce the desired outcome."

This transition did not take place smoothly, however. In the early decades of the century, development in the behavioral science fields had been characterized by an attitude of missionary zeal. Recoiling from this, behavioral scientists swung strongly to a hard data, basic science approach based on mathematical models. Any behavioral scientist who associated himself with applied science or action on social problems found himself in lower class status in his profession.

Now the pendulum is swinging the other way, and the social and behavioral sciences are under pressure to develop a "clinical branch," much as clinical medicine represents an applied division of human biology. By moving from a phase of scientific development which has leaned heavily upon observation, comparative generalizations and taxonomy, the behavioral sciences are now ready to increase their contributions by becoming, in addition, agents of social change. Experimental intervention may yield a new set of insights and theories which will enable behavioral scientists to increase their contribution still further.

Any increased emphasis on applied behavioral science should, however, be achieved without setting up institutional barriers between the theoretical and the applied. These two aspects of the behavioral sciences form a smooth spectrum and should not be isolated from each other. Through this pattern of basic research, development of alternatives, evaluation of alternatives, and intervention which applies the most feasible alternatives, behavioral scientists can work with the medical profession not only in the delivery of health care in the narrow sense of the word but in the broader areas of social and community organization.

BEHAVIORAL SCIENCE RESEARCH AND MEDICAL EDUCATION

> Students are much more interested in behavioral science concepts when they can see them applied in research than when they are presented in the abstract.
>
> If we are going to teach people in the health professions how to give good health care, we need to base our judgments on clear evidence that a particular approach is viable. . .
>
> We should not just say, this method of health care makes sense because it is very humanistic and hits me in the gut; therefore, I am going to teach it to medical students.
>
> People . . talk and they study, but if no changes come out of all this for people who have health problems, none of this is worth anything.

Research, the conference participants said, is an essential part of the contribution of the behavioral sciences in the medical schools, but medical problems have not been a major focus of behavioral science research in the past. The importance of behavioral science research was discussed in several contexts:

- its role in providing basic knowledge of human behavior which may give physicians and medical students better understanding of health and illness.
- its role in giving students a broader understanding of what they will be able to do as physicians to create more effective systems of health care
- its role in supplying knowledge, techniques and methodologies which can help to bring about better health care practices
- its role in demonstrating new types of health care practices and programs
- its role in evaluating health care programs and medical education with the purpose of improving both.

During the four conferences, several participants reported upon different types of medically-related behavioral science research. These ranged from the importance of epidemiological studies in the development of preventive care to studies of changing roles in health care; from cross-cultural studies of the effects of infant stress on human growth to studies of the effects of early separation on later mother-child relationships.

These studies were reported in varying degrees of detail and for a variety of purposes. Some were presented in the context of the kinds of information medical students need to know in order to give effective medical care or bring about improved levels of health care service. Others were presented with the emphasis not on specific findings but rather on research design or on research experience as one important means of educating medical students. One of the students, for example, reported on studies he had done on the entrepreneurial medical specialty group as a health care delivery system, the spectrum of community health facilities needed to enable physicians to offer comprehensive care, and the patterns of transmission of information between patients, nurses and physicians. In these projects, the student indicated, he not only gained much information that will be of value to him as a physician, but he learned the techniques and methodologies of several disciplines and how they are applied in research.

Dr. John M. Whiting, professor of social anthropology at Harvard University, described several cross-cultural anthropological field studies in which students explored factors affecting human growth and development which may have implications for problems of medical care. Child-rearing practices vary widely in different cultures, Dr. Whiting said, so an assessment of infant stress and its effects on later development seemed in order. Because considerable data is available about skeletal growth of children in various cultures, this was selected as the dependent variable for a series of studies centered around this theme. Information on the mean stature of adult males is available for nearly 70 societies in which there is also data on child rearing. The effects of separation from the mother were studied in the same societies. Other possible factors affecting development such as genetics, diet, climate and geographical race were also considered.

An analysis of variance in the combined findings of several studies showed that both separation from the mother and physical stress have an independent effect on growth, but the effect was often the opposite of what might have been anticipated on a purely common-sense basis. The findings of these studies are intriguing, Dr. Whiting said, and stimulate thinking about additional studies which might shed light on the interrelationships of individual and cultural behavior on human growth, development and health.

In relation to medical education, Dr. Whiting pointed out that we need at least some physicians who have a real sense of identity with both medicine and the behavioral sciences. To develop this sort of identity, medical students need to learn behavioral science knowledge and skills through real life, firsthand experience, not just by having someone talk about them or by interviewing people in the unnatural confinement of the clinical setting. If time pressures in the curriculum could be overcome, medical students could learn a great deal by working for a number of months as members of anthropological field research teams. As participant observers, they would make actual use of behavioral science techniques. By focusing particularly on medically-related aspects of behavior, they could make a valuable contribution to the basic data of such studies and simultaneously enrich their own range of skills as physicians.

Dr. William B. Kannel, medical director of the Framingham study of the National Heart and Lung Institute, described long-term studies of risk factors in coronary disease and their importance in predicting and preventing coronary attacks. Dr. Leonard Syme pointed out that studies of specific kinds of behavior, specific kinds of personalities, and specific social processes associated with risk can be helpful in developing health care programs to reduce morbidity and mortality.

The amount and type of emphasis given to research in medical schools depends upon the basic philosophy of the school, the interests of the faculty, and the career orientations of students. At some schools, research projects develop out of recognized needs for basic knowledge or for improvements in health care services; and the impact of this research on medical students is incidental, or at least of secondary importance. Some schools stress the importance of providing access to animal behavior laboratories to help medical students grasp behavioral science concepts. Faculty in these schools believe it is just as important for students to have firsthand experience in behavior laboratories where they can discover and explore the relationship between biological and behavioral problems as it is for them to have experience in physiology and biochemistry laboratories.

In other schools, research methodology is heavily emphasized and students are given both theoretical and practical experience in the application of research techniques. At The Johns Hopkins School of Medicine, for example, about half of the students plan to go into research rather than clinical medicine, according to Dr. Paul White of the Department of Behavioral Science at Johns Hopkins School of Hygiene and Public Health. In order to meet the needs of students with different educational goals, sharply-focused seminars demonstrate the methodology and provide intensive experience in particular areas. For example, a seminar may center on hypertension. On the basis of direct experience with patients, students are asked to hypothesize about the relationship of hypertension to a particular mode of life. First they are told that hypertension is more prevalent in urban areas, and asked to hypothesize why this is so. When they have reached what seem to be valid conclusions, they are told, no, hypertension is more common in rural areas and they are to hypothesize that. This helps them realize the danger of accepting anything at face value. They are then sent to the literature to discover what quality of research is being done in this area and what has to be done to assure reliability of findings.

Research Design in a Study of Maternal-Infant Relationships

An example of the kind of behavioral science research that can be useful in helping students understand how to resolve problems of medical practice was provided by Dr. Clifford R. Barnett, Professor of Anthropology and Associate Professor of Pediatrics at Stanford University. He discussed the research design of a study of maternal-infant relationships done at Stanford.

A great many premature infants who have no known neurological or physiological damage show various kinds of learning disabilities and behavior problems by the time they reach school age, Dr. Barnett said. These usually come to attention as problems of clinical medicine. But the important factors often do not lie in the medical area. The child may have failed to develop normally because of the way his family reacts to him.

In the hospital at Stanford, nurses called the attention of a pediatrician to the fact that mothers who came to the discharge nursery to take home their premature infants who had been hospitalized for two or three months handled them very differently than mothers handle normal full term infants from whom they have not been separated for a prolonged period. There seemed to be an unbridged distance between them which suggested that there may be a critical period with regard to the mother getting attached to her infant. If she is kept away from him and not allowed to handle him throughout this period, she may be unable to relate warmly to him when he is ready to go home. This, in turn, may affect the father's attitude toward the child; and the resulting psychological isolation may lead to development and behavior problems as the child grows older.

In an effort to understand why mothers behave differently toward premature babies, a physician member of the Department of Pediatrics asked Dr. Barnett to develop ways of measuring this difference and to discover what effects are traceable to the separation of mother and child during the early weeks of the infant's life. A study of this kind underscores the importance of a behavioral scientist being in the clinical setting where he is available not only to observe problems but to respond to questions, Dr. Barnett said. This particular study would never have developed if he had not been on the scene when a pediatrician began to be puzzled by something he had observed.

Initially the research team consisted of a pediatrician, a psychiatrist, an anthropologist, and a social worker who had considerable research experience. When funds became available to expand the study a sociologist and two psychologists were added, as well as an auxiliary staff of numerous part-time interviewers. Ideally, this team should become the nucleus of a permanent behavioral science group.

Since it was desirable for the purposes of this study that the infants go home to relatively good environments, entrance criteria for study subjects required that the infants come from intact families. In this particular geographical area, this requirement screened out much of the high risk population ordinarily subject to premature births. The study group was therefore a very select population.

The conditions of the premature nursery were also atypical, since it is in a federally supported research center whose principal goal is to provide a model of optimal care. The nurse-infant ratio is nearly one-to-one, and all babies receive outstandingly good care and attention, whether they are included in the study population or not.

For study purposes the infants were divided into three groups: prematures who were separated from their mothers and cared for in the traditional way, prematures who were not separated from their mothers and a control group of full-term infants. A three-year pilot study preceded the two-year longitudinal study. This was necessary to develop research instruments for testing mother-child relationships and also to determine whether mothers can be allowed in premature nurseries without increasing the risk of infection. At the time the practice of keeping parents of prematures out of the nursery and away from their babies was instituted, it was a necessary and logical precaution against infection, since there were no antibiotics or other reliable means of controlling infections. The emotional hazards of separating the mother and child were recognized many years ago when the isolettes were first developed, but the physical safety of the infants had to take precedence.

The pilot phase of the study showed some surprising results. Instead of increasing when the mothers were admitted to the nursery, infections decreased. It is not entirely clear why, but the need to demonstrate aseptic procedures appeared to reinforce the nurses' behavior in a number of ways which resulted in an upgrading in the quality of care. For one thing, the mothers would report lapses in sanitary precautions such as hand washing between handling different babies. The mothers also kept close watch on the oxygen and heat levels of the isolettes and on the temperatures of the babies and other early signs of illness. The role of the nurse changed from isolated caretaker to teacher, and this also had a positive effect on the quality of care. In addition, regular meetings were scheduled in which the pediatricians, nurses and members of the research team discussed problems of care.

The two-year study which followed the pilot study was controlled in as many ways as possible for factors which might have biased its reliability. All infants received essentially the same level of stimulation and handling from the nurses. Baseline data on the attitudes of the mothers was gathered before they were subject to separation or non-separation from their infants. Then mother-child interaction was observed before the infants left the hospital and again some time after they had gone home. Different observers were used to prevent carry over from the initial rating to the later rating. The observers were trained in mother-child observation, but they were not told the nature of the study.

Since the focus of the study was entirely on mother-child interaction, such questions as the economics of different types of care and the effects of differential stimulation were not explored. A number of organizational problems developed in the study, particularly when care was moved from the federally supported premature research center into the regular hospital nursery. The study design required that all infants must undergo a week of developmental testing, observation of sleep activity, and observation of mother-child interaction immediately prior to discharge; and it was essential to the validity of the data that this requirement be fulfilled. This was sometimes difficult to enforce because private physicians would sometimes insist on discharging infants before testing had been completed. This was a difficulty which had not been anticipated. It is characteristic of the kinds of problems encountered in studies of this kind which must be controlled if the reliability of the study findings is to be assured.

Although not all the data are in, Dr. Barnett said, three points have been demonstrated:

- that admitting mothers to the nurseries does not cause an increase in infection
- that allowing the mothers to handle and care for their premature infants increases their confidence in their ability to care for these high risk babies when they go home
- that mothers who are allowed to care for their babies feel more attached to them than those who are separated from their infants for several weeks.

For the most part, Dr. Barnett said, both pediatricians and nurses are enthusiastic about this method of care. It makes sense to them, and they feel comfortable with it. Careful evaluation is, of course, necessary to substantiate the validity of the approach. It is too soon to predict whether separation or non-separation will have long-range effects on the mother-infant relationship and, consequently, on the child's development.

A tremendous amount of interest among medical students has been generated by this study. As a result, a course has been developed on the hospital as a sociocultural unit. Students are exposed to the particular areas of knowledge of each member of the research team. This helps them see how the insights of the behavioral sciences can be brought to bear on specific clinical problems, and what the insights can suggest about necessary changes in the way health care is delivered. It is particularly useful to draw the students into actual participation in building up the social and psychological history and to involve them in the total process of care as field work experience. The experience with this study, Dr. Barnett concluded, has shown that well designed behavioral science research projects can contribute significantly both to exploration of problems of medical care and to the depth and scope of medical education.

Use of Nurse-Clinicians: A Study of Changing Roles in the Delivery of Medical Care

Through his presentation of a study of changing roles in the delivery of medical care, Dr. Charles E. Lewis of the Center for Community Health and Medical Care, Harvard University Medical School, provided a base for discussion of several questions:

- What social and behavioral science concepts or issues are inherent in patient care?
- What are the underlying variables?

- What roles could different behavioral scientists play in the improvement of patient care?
- What opportunities and implications do various kinds of patient care provide to teaching behavioral science concepts to medical and other students?

Medical students are customarily sent to outpatient clinics to learn about ambulatory care, but the way the system operates gives them little real opportunity to learn anything about comprehensive patient care, because the patients do not, in fact, receive such care in the traditional clinic.

The majority of patients who come to outpatient clinics are under care for chronic illness. What they need primarily is surveillance and management rather than elaborate medical evaluations, because their conditions remain relatively static over long periods of time with few biophysical changes. In the traditional clinic they are usually seen by a number of different physicians, and in teaching hospitals by medical students and residents as well. There is little continuity of care and little opportunity for the patient to develop a continuing relationship with a single physician or nurse. Under this system, nurses in outpatient clinics must often spend more time on paper work than on providing nursing care. The net result of all this is that the time of physicians is poorly allocated, the skills of the nurses are poorly utilized, the student learns little about good patient care, and the patient receives less effective care than he should have. Each of these categories of people is apt to feel frustrated and dissatisfied in his relationship to the medical care system.

Some years ago, as Chairman of the Department of Preventive and Community Medicine and Chief of the Outpatient Department at the University of Kansas, Dr. Lewis became dissatisfied with the way the outpatient department functioned. He undertook time and motion studies to discover what might be done to improve the utilization of professional time and the quality of patient care and the educational opportunities the clinic offered for medical and nursing students.

A protocol was developed which would turn over primary patient care in the outpatient clinic to registered nurses, on the theory that at certain periods in a patient's illness, nonphysicians concerned with the management of patients and their illnesses might be more effective than physicians concerned with the diagnosis of disease and management of complications. Since teaching hospitals differ in significant ways from nonteaching hospitals, the experiment was conducted simultaneously in the university hospital and a community general hospital which had a large outpatient department. The medical and nursing directors of both hospitals responded favorably to the proposal, and a three year demonstration project was begun in June 1965.

Five categories of patients with chronic illnesses such as hypertensive cardiovascular disease were selected to participate in the study. Patients with complex problems such as arteriosclerotic heart disease with concomitant gallbladder disease were excluded. Standard charts were developed which provided an inventory of the demographic characteristics of the patients. These constituted a sort of "natural history" of each patient's case, his past history of illness and medical care, his behavior during illness, his attitudes toward physicians and nurses in general and what he felt doctors and nurses could or should do to people in clinics.

The specific duties of the nurses under the new system of care were described in standing orders. They were to schedule patient visits, see the patients, and request that the physician see the patient whenever any significant change was noted. They were not allowed to change medication.

The patients were stratified by sex, age group, race, and disease focus; then these "cells" were divided at random into control and experimental groups. The control group returned to the same clinic system under which they had been receiving care. As the patients in the experimental group came in for their clinic visits, it was explained to them that the hospital was attempting to improve care in the outpatient department, and that this would be done by turning their care over primarily to the nurse, who would schedule their visits and see them when they came in. The back-up physician would review the charts each evening and would see the patients whenever they requested it. To his surprise, Dr. Lewis said, none of the patients invited to participate in the study at either hospital declined, and not a single patient dropped out of the study. In only about five out of each 700-800 visits did patients bypass the nurses to go directly to the physician. In about one out of every 10 visits, the nurses discussed the case with the physician or requested that he see the patient.

Several types of analysis were conducted. Time and motion studies of the experimental and control groups were done to see what the physicians, nurses and patients actually did during the clinic visits. The nurses were asked to describe what they felt they were doing that was important in the outcome of medical care for these patients and what they felt the critical incidents in each case were. Their priorities were entirely different from those of the physicians, who placed such items as arriving at a diagnosis and prescribing drugs at the top of the list and evaluation, dietary instruction, and so on far down the list. The nurses tended to place such items as professional manner and use of self high on their lists of critical incidents which they felt affected patient care.

Patient compliance and the interaction between the patients and the nurses was analyzed on the basis of interviews taped during visits of the patients. Some interviews were videotaped for teaching use.

Patients were asked by an independent evaluation team whether they would prefer to have physicians or nurses do certain things for them. Early in the study, about the only things the patients said they would prefer to have the nurses do, or didn't care who did them, were giving shots, taking blood pressure, and giving dietary instruction. When the same questions were asked a year later, the balance had shifted sharply so that the vast majority of the patients expressed willingness for the nurse to do almost everything except make the medical diagnosis. At the non-university hospital, the shift was complete; patients were willing to transfer all role functions from doctors to nurses. The comments of the patients were extremely favorable. They made remarks like, "She does all the things a doctor does, but with a more human approach." Sixty percent of the patients in the experimental group said they sometimes thought of the nurse as a physician.

Some particularly interesting changes in the behavior of the patients were noted. There was a decrease in employment among patients who were seeing physicians in the traditional clinics, and an increase in employment among those who were attending the nurse clinics. The frequency of complaints was significantly reduced in the nurse clinics, and the number of broken appointments diminished. The rate of use of other care resources was significantly higher among the regular clinic patients.

One of the principal deficiencies of the project, Dr. Lewis said, was that insufficient attention was given to the environment in which it took place. Behavioral scientists were associated with the project from the beginning, but perhaps not as closely and productively as they should have been, as they served only on a consultancy basis.

One important question that needs to be considered, Dr. Lewis said, is what social and behavioral scientists might contribute to studies of this kind which would make it easier to overcome some of the obstacles encountered in setting up the study, putting the system into effect, and preserving its positive effects after the study ends.

What unique social and behavioral perspectives can medical students obtain through such studies of the "natural history" of particular systems of patient care? A principal problem in the development of health care is that we keep on doing things in the traditional way instead of trying new ideas, Dr. Lewis said. We simply chop off pieces of traditional systems and try to make them serve new purposes. If new systems are to work, students need to be introduced to the many social and behavioral variables involved and to ways of coping with them.

Assuring the Validity of Research Data
Individualizing Medical Education

Several times during the conferences the participants discussed the relative merits of hard and soft data, what kinds of data can be accepted as scientific evidence, and whether health care programs must necessarily grow out of formal studies or can, with equal validity, be structured and evaluated on the basis of pragmatic, empirical observations.

Medically related behavioral research too often relies upon an intuitive sense that something must be true because it makes sense, some participants said. Medical-behavioral problems are beset by a tremendously large number of interacting variables, but more effort must be made to develop studies based on classic, solid research design which produces objective, well-substantiated data.

People rationalize failures to prove hypotheses in various ways. They may say there is nothing wrong with the hypothesis; that the only reason a certain relationship hasn't been found is that it doesn't exist. They may say the relationship hasn't been found because the methods of assessment are inadequate; if only they had more precise measurements they would have the problem licked. Or they may say that the methods are perfectly adequate but the problem is conceptualized in the wrong way; that people measure proteins and carbohydrates and saturated fats when they should be conceptualizing diet in more relevant ways like studying people who nibble all day versus those who stuff themselves three times a day and overwhelm their metabolism. A fourth posture is that the problem is conceptualized and measured correctly but people are not studying the right populations.

Several participants expressed concern that health care projects which operate from a base of social intelligence and sensitivity are being "sold" as if they were based on the application of carefully researched scientific principles. Methods of care are being adopted not on the basis of published scientific data but on the basis of an emotional response to what people think the answer ought to be. This smacks of fadism. If some of the same studies of nursery care techniques that have recently been done had been done in the 1920's the results would have been exactly opposite, because sterile conditions were the big thing then. Now we are all for togetherness.

To give another example, the fact that people use an informal clinic and come back to it, does not prove that a casual waiting room is more useful than an austere one, that one setting for a clinic is better than another, or that the clinic is giving effective service or benefitting the community population. People come back to big, ugly urban slum hospitals that give terrible treatment. They come back generation after generation because they have no place else to go.

There is nothing wrong with setting up programs with high social sensitivity, but they should not be equated with programs based on scientific evidence. At the present time, most experimental health care programs are being evaluated on a totally pragmatic basis if they are evaluated at all. There is a hazard that the enthusiasm and commitment of those involved in studies may influence others to adopt methods that have not been fully tested. Programs should be based on sound criteria and studies of comparative models.

Physicians and medical students must learn to take the point of view that finding valid answers to behavioral problems encountered in clinical medicine requires the same level of scientific investigation that is required to study something like an electrolyte balance. Well designed behavioral studies can provide the answer to many significant questions. However, there is a limit to what they can show. Clinicians sometimes have unrealistic expectations about what kinds of instruments behavioral scientists can devise and what kinds of answers they can supply.

People who go into the behavioral sciences have a different concept of what is hard data than those who go into the biological sciences, one participant said. Anecdotal materials seems to be the mainstay of many behavioral scientists. Why is there this willingness to accept crude anecdotal data as "true?" It often does not seem to occur to anyone that there may be a vast difference between what a patient reports and the reality of the situation, or that the validity of material should be checked by getting outside corroboration or comparing it with data on other patients with similar problems.

Behavioral scientists are not the only ones who make use of soft data, another participant replied. The assumption that physicians base what they do only on cold, hard facts is a lot of malarky. Unsupported material is picked up all the time as a basis for changes in practice. For example, for many years obstetricians and pediatricians advised mothers to bottle feed their babies and not pick them up when they cried. Then custom swung the other way and physicians began to urge mothers to breast feed their babies and respond to their cries. But there was no really hard, reliable data to support either practice as being better for the mother or the child.

Behavioral scientists are often accused of using soft data when the problem is not with the data but the way other people use it in a soft and careless fashion, other participants added. The fact that behavioral and social science data are, indeed, often soft does not necessarily negate their value. The softness is due to the fact that behavioral and social scientists study human beings. This affects the kind of data that can be obtained. But it is still enormously important for behavioral scientists to ask the kinds of questions they do. Whatever softness exists, one participant said, is "a glorious softness."

The conference participants made no effort to catalogue the many types of behavioral research which could enrich medical education and contribute to better health care. However, numerous areas needing research were mentioned in the course of discussion. Some of these are:

- large, cooperative trial projects on primary prevention of various diseases. These should be conducted simultaneously in a number of areas over a period of several years
- motivational studies to determine how patient adherence to desirable regimens can be obtained
- comparative studies of the similarities and differences in life style of individuals who do or do not develop certain diseases
- studies to identify why some people who "do all the wrong things" develop certain diseases like atherosclerosis and others who do the same "wrong things" do not
- prospective studies in humans to determine whether modifying the precursors of coronary disease can alter coronary mortality
- epidemiological studies to untangle etiological associations in various disease

- additional studies of sociological and psychological risk factors in various diseases based on questions about specific kinds of behavior, specific kinds of personalities and specific social processes that increase risk
- studies to develop more objective ways of measuring behavior, risk factors, and the presence of disease
- studies to discover safe, effective methods of altering risk factors in disease without causing too much disruption of living patterns
- systematic evaluation of new approaches to health care
- studies of what types of people use various types of services and under what circumstances
- studies of what social and cultural factors affect the demand for care
- analysis of medical care as a social system
- assessments of the effects of societal, legal and governmental factors upon various aspects of medical care
- identification of the administrative factors that affect development of health care
- development of new types of health personnel to make the delivery of care more effective and more efficient
- establishing criteria for the quality of care
- studies to determine how the medical curriculum can be more closely related to the requirements of medical practice.

CHANGING PATTERNS OF HEALTH CARE: IMPLICATIONS FOR MEDICAL EDUCATION

> The main function of the practicing physician should be the delivery of good health care, and right now many students are unhappy because they can see that whole segments of the population go without health care until their medical problems have become serious and often irreversible.

Medical structures geared primarily toward coping with inpatient care of specific disease entities represent a cultural lag, the conference participants said. What is needed now, and is being applied in many forward-looking projects, is the broader concept of bringing both medical and behavioral science knowledge to bear in providing health-supporting and disease-resisting resources in many types of facilities. Inevitably, this means that the role of the physician is changing, and medical education must be reoriented to prepare students to provide new types of care in a greater variety of settings.

One of the chief things that needs to be demonstrated to the future physician is that the whole network of the health care system too often lets patient care fall by the wayside. It is time we stopped building fancy new buildings that don't meet people's needs. We need to conceptualize problems as they exist in the real world and not just in the way that is convenient for us as professionals of various kinds. This is what leads to fractionization of services.

In order to explore what changes need to take place in medical education, the conference participants examined the changing role of the physician in detail. Several participants discussed the health care system and various innovative types of health care programs. Dr. Robert Straus, Chairman of the Department of Behavioral Science at the University of Kentucky College of Medicine and Dr. Hans O. Mauksch, Professor of Sociology at the University of Missouri School of Medicine, discussed health care—especially hospital care—as an institutional process, some of its implications for changing patterns of health care, and what these suggest about changes in the focus of medical education. Dr. Robert E. Cole of Chelmsford Medical Associates in Massachusetts described a program of entrepreneurial group practice. Mr. and Mrs. Christopher Braga and Miss Leona Judson, members of the staff of Salud Health Center in Woodville, California discussed its innovative program. As reported in the previous chapter, the two research projects discussed by Drs. Barnett and Lewis centered around new patterns of health care.

Educating Students for the Changing Role of the Physician

> The central issue is that there has to be a whole reorientation of the purpose of medical education to create a new role model for the physician—a physician who is primarily interested in the prevention of disease rather than its cure.
>
> One thing we are dealing with is the definition of a medical school: whether it is a professional school or a health university.

The present scope of medical education is too narrow, the conference participants said. It is still following a nineteenth century model. The dominant culture of the medical school is one in which the model of man is that of acute illness; and all the prestige, reward and glamor go to the physicians who provide effective short term intervention for the acutely ill patient. Traditionally, education for the delivery of medical care has centered around the patient who is horizontal in bed with an infectious disease. The physician has been called upon to treat episodic illnesses in which the episodes are often unrelated to each other.

But the killers today are not acute, infectious diseases like influenza, pneumonia, typhoid, dysentery and malaria. The killers now are heart disease, stroke and cancer. All of these are chronic illnesses treated on an ambulatory basis in which the patient has repeated episodes of getting better and worse, often with steady downhill trend over a period of years.

Thus the medical student needs to be trained primarily to deliver ambulatory care in an office setting to chronically ill patients; to maintain normal health in well individuals; and to pick up clues that will enable him to prevent two other great killers of our time, accidents and suicides.

All of these problems have behavioral as well as medical components. Physicians in practice see a large proportion of patients who present symptoms of a magnitude that cannot be explained by any defined state of organic disease. Some of this is due to the inadequacy of our diagnostic techniques. And of course, some of the symptoms that mimic organic disease represent psychosomatic problems, But it is also true that inadequate attention has been given to the functional overlay of minor organic illnesses.

It is important that the medical student understand that he is dealing with biology, the study of living things, and that this inevitably means that he will encounter tremendous individual variation. When data for groups of individuals are plotted, they come out to a smooth, bell-shaped probability curve which shows the range of variation that is normal in any human phenomenon. Physiological and biological data usually give a predictable curve. Behavioral phenomena are apt to be much less predictable, with a much more spread-out curve and individuals moving back and forth over the edge of the standard image of "normal." Very early in his training, the medical student needs to understand that normal behavior can and does cover an enormous range of individual variation.

The change in the types of medical problems physicians encounter and the expanded knowledge of both biology and behavior are creating many new demands upon physicians, but the medical schools are not organized to educate students for this change in role. In recent decades, the emphasis has been on a high degree of specialization and there has been little opportunity for students who wished to prepare for work in innovative types of health care programs or to become sophisticated primary care-taking generalists.

Students can see where the bread and butter is and where the prestige lies, and many react by conforming to the dominant model. However, there is increasing demand both from students and from the public for the schools to produce a different kind of medical graduate who has a concern for people and their problems on a continuing basis and can do more than combat the immediate physical effects of illness. One of the tasks of medical education is to produce physicians who are biosocially trained who are able to integrate necessary specialty skills into the care of patients, and some of whom may also choose to use this foundation as a base for becoming agents of social change.

The kind of primary physician that is needed is not just a resurrected general practitioner. He is a new kind of physician who has not existed before—an individual who is willing to accept the trusteeship of another person's health. This new kind of physician will have to be a leader, a broker, an integrator, a coordinator who helps the patient find his way through the huge amorphous health care system, giving a lot of emphasis to prevention. The physician interested in providing comprehensive care has to be willing to invest a great deal of time and energy in training and, later, in practice. But it can be enormously exciting and rewarding in terms of personal satisfaction and in its effects on the lives of patients.

We cannot go on training all physicians in the traditional way and expect them somehow to be able to do things differently. We need to make students aware throughout their entire medical education that it is just as important to understand the psychological and social status of the patient as to understand the physiology of his disease. Medicine is now quite sophisticated about biophysical problems, but it is unbalanced so long as it fails to emphasize the importance of man's social interactions in relation to the causation of disease. A physician can be much more effective as a clinician if he can view the patient with the insights of the behavioral as well as the biological sciences. To be fully competent as a sub-specialist in any field, most participants felt that a physician must accept some responsibility in relation to the total care of the patient.

Because medicine as now structured does not begin to meet the total needs of patients, another logical implication is that at least some students need to be trained in new ways of delivering health care. This, in turn, means that we must also train other people to perform many of the functions physicians now perform so that they can use their particular medical skills more effectively. To overcome the enormous shortage of personnel in the health services, we are going to have to turn more extensively to allied health caretakers, and we must teach physicians how to work with colleagues in other disciplines.

As medical students enter practice, they will work in many administrative structures. Some will be in traditional forms of private practice. Others may be affiliated with community health programs or clinics in which care is provided on a team basis. With the level of knowledge now available that needs to be applied in patient care, no one individual can do it alone, any more than an orchestra conductor can play a Beethoven symphony all by himself. But neither can the orchestra play without a conductor; someone has to provide leadership to produce effective coordination and he needs to be specifically trained for this management responsibility.

These men and women need to know a tremendous amount not only about the biological and physical sciences but also about the behavioral and social sciences. But substantive knowledge is not enough. These physicians must have the back-up efforts of many other people, physical resources that enable them to do something about problems they identify, a medical care system so well orgazined that it can deal with thousands of people with no loss in the quality of care. They must have, as well, the broad scope training that will prepare them to use all these resources with maximum effectiveness. Medical education, as now designed, does not provide this sort of preparation. The need is two-fold: for curriculum expansion within the medical school and for training opportunities outside the school.

The multidisciplinary degree is not the answer, some of the participants said. It is not feasible in terms of money for most students, and it is also infeasible because it is too narrow an approach. The curriculum needs to be restructured so that it comes out not being medical education with a dash of behavioral science education thrown in but a whole new entity of health science education. Medicine should be only one of several central disciplines concerned with health.

The discussion of the responsibility of medical education to create new role models for physicians generated a great deal of discussion of the physician's role as an agent of social change and the implications of this issue for medical education. Recognizing the inextricable relationship of social and behavioral problems with medical problems, we must ask two questions, the participants said.

These are:

- What responsibility does the physician, as a physician, have to help change the social and economic conditions that contribute to medical problems?
- If he does have a responsibility, how must medical education be modified to prepare future physicians for this expanded role?

All of the participants shared a deep concern for the problems which beset society today, and most agreed that every citizen has a responsibility for social action. Where they differed was in the amount of effort they felt a physician should allocate to his responsibility as a citizen in contrast to his role as a medical practitioner.

Obviously, none of us can be all things to all people, a participant said, but a lot of people manage to combine specific professional responsibilities with being agents of social change. Physicians are no exception, and there are a lot of important issues in which they need to be involved.

Day care is one of them. This is a big trend right now. The projected figures of how many mothers are going to be working within the next decade are astronomical. Good day care services require community organization and community development, and protection of the health of the children has to be one of the biggest parts of this effort. Doctors and behavioral scientists should be heavily involved in determining what young people learn about parenthood and how infants are taken care of.

The point of view that physicians should devote themselves primarily to fullest use of their skills in treating disease rather than in preventive care or the solution of social problems was expressed with particular strength by two behavioral scientists of different disciplines. Both based their arguments on the scarcity of physician manpower.

It would be a tactical mistake, one of them said, to take manpower away from the already undermanned profession of medicine to put it into health care. If we have 80 medical students in School X, we will not obtain optimal results by switching the curriculum so 20 of them come out as "carers" rather than "curers." The optimal result would be to expand so we have 80 for cure and another 80 for care, with a lot of intermixture between them.

It would be a terrible waste of scarce physician manpower to push medicine into handling problems that are not medical problems, the other behavioral scientist said. Take, for example, a myocardial infarction case. We have a guy who is handicapped. He can no longer be the contractor for his men. So we say, OK, we'll get him into the rehab program. Maybe we discover he is illiterate. So we help him overcome this, and we give him some other kind of training that seems appropriate. Then suddenly we discover that no industry is about to hire a 50 year old man. We started out with an unemployed illiterate, and what do we end up with? An unemployed literate.

You present this kind of case in the medical school and the patient, the faculty and the students all end up at a point of exquisite frustration; and they say, "My God, something is wrong with society!"

And indeed there is. But is this a medical problem? What is the physician going to do about it—is he going to spend his time trying to change the hiring practices of industry? This is an economic and social problem, not a medical problem.

To give another example, a group of physicians went to a southern state and saw a lot of kids suffering from malnutrition. When they looked in the literature, they found that the cure for malnutrition is pumping food in. So they spend a lot of time developing cooperatives and changing the economic base. This was not the best use of their skills as physicians.

There are a number of different ways we can approach the solution of such problems. We may recognize a problem that we think is of national significance and set about identifying certain crucial parameters. Then the next step is to ask, how can we alleviate this problem? We may discover that the problem is not essentially a medical problem—that it is economic or social or cultural, and the only way we can solve it is to concentrate on these aspects; that whatever we might do medically would have little effect. If this is the case, is it still the physician's responsibility to solve the problem?

There are a lot of things about society that have to be changed, but we have to be realistic. They don't all have to be done by physicians. We can break down the jobs and delegate them out. We can train people in a variety of ways to change the system. If we need co-ops to get food into kids to keep them from turning into patients, maybe it is the job of the economists to get them going. It doesn't have to be done by physicians.

Other participants disagreed vehemently with the view that it is a waste of medical resources for physicians to become involved in the solution of social and economic problems. The physician who set up the cooperatives was the only one who had sufficient clout to crack the power structure of the State and use its own vital statistics against its own health department, they said. An anthropologist couldn't have done this, and neither could an ordinary citizen. Only someone with the armor of a physician could get away with it, and this is good use of a doctor in this country.

Both classical medicine and classical public health are reasonably good at defining problems in terms of the community as well as the individual patient, but both groups have been terribly ineffective in intervening to bring about social change. They recognize that a lot of medical problems grow out of housing problems, economic problems and lack of jobs; but they have not applied the necessary muscle to alleviate these problems. The working relationship between medicine and other social institutions is confused and functions poorly. The result is an "unsystem" that introduces an enormous amount of confusion in the minds of physicians, of the public and of medical students.

A lot of physicians are frustrated because they cannot treat patients in the way they would like to treat them. They do not know how to change the socio-cultural and psychological factors that underlie medical problems, and they don't know how to change the system. Similarly, a lot of students who are interested in being agents of social change are frustrated by the fact that they don't know how to go about it.

What does this mean in terms of the priorities in medical education? Should students, perhaps, have courses in "change agentry" or how to influence politicians? How do we teach ourselves and our students more about the medical and social system in which they will have to practice and how they can influence decisions about what is to be done in a given community?

How do we decide what is medicine and what isn't medicine, and what students need to know to practice medicine effectively?

We can't push problems aside in medical education because we think they are not medical problems. There are a lot of things that medicine has traditionally said are not part of medicine which are all part of human ecology and therefore affect people's health. We know, for example, that some infants are almost certainly going to be deprived from the day they are born, and that this means physicians are going to have to take weeks of time on each case trying to correct the same cycles of problems. Until we do something to break the cycles, physicians will not be free to use their medical skills and knowledge as effectively as they should on the many other problems also in need of attention.

Most physicians now in practice have not been sensitized to the social and cultural problems that affect health. One important objective of behavioral scientists in medical education is to see to it that medical students—the upcoming generation of physicians—do understand the issues that create public or individual health problems.

This presents certain problems to medical educators. In just four years of medical education, how can they give students enough background to deal effectively with acute medical problems and also with the chronic problems of society? And how can medical education help to modify priorities within the medical system and the larger community system so that better use can be made of the sensitivities and interests of the medical students?

A great many medical students are highly motivated to participate in community health programs, but the medical schools have been snuffing this out by not responding to it in the proper way. There has not been enough demonstrated concern by faculties and university hospitals about community responsibility as an important part of what they are offering. Even in a relatively classic department of medicine, students can be motivated to alter their careers toward community medicine if they see that something can be done, that people are interested, and that this is a genuine concern of the university medical service.

But too often the medical schools deliver double messages. They tell the first year medical student that he must look at the total family and community situation, not just the isolated medical problem. But the student very quickly becomes aware of the lack of trained personnel and the lack of physical facilities to carry through this approach. Furthermore, he gets the clear message from the attitude of the faculty that if he wants to go off into some innovative community program he will have to do it on his own; and he will get no support from faculty because they really haven't the interest or the skills to provide much for communities.

However, we must consider carefully how far we can reorient medical training so that students will become major agents of social and political change without diverting them from the principal responsibilities of the medical profession. A lot of students now come into the medical schools with strong political motivation, a participant said. If you ask them their chief reason for going into medicine, they will say, "because I feel this is going to put me in a position to move things." What they want to move is the economy of politics. Some of it is tied in with change in the medical system and some of it is not. These students want to be change agents. They think the way to do this is to become part of the power structure, and they think being physicians will put them there.

The trouble is that when these students start working with patients, a lot of them are absolutely terrible. They have the attitude that they are all for "the great unwashed," but when they come up against a person, they can't deal with him as an individual. They have been dealing in symbols too long, and he is just a symbol to them.

A doctor doesn't need to know who the patient's grandfather was or everything about her life style, but he does need to be able to relate to her. He can't, for example, be afraid to touch a black woman.

Other participants disagreed about what kinds of students make good physicians. Sensitivity to social concerns does not cause them to lose themselves in great conceptual issues, they said. By and large, the most socially concerned students make the best personal physicians.

Whether or not a physician wants to be an agent of social change, he will find that the kinds of problems he has to deal with today have a larger social component than the problems physicians had to deal with 30 years ago. Most physicians do not have the training in the behavioral sciences they need to cope with these complex problems. Ninety-five percent of their training is in the biophysical sciences. This is not an appropriate balance, and it must be changed.

Reorienting medical education to reflect the changing concepts of professional practice cannot, of course, be done overnight. It will be an evolutionary process involving many kinds of change. Until recent years, education was characterized by a high degree of consensus among the students, faculty and society. This was true of all professional and liberal arts institutions. People agreed on what colleges ought to do. We are not in that state anymore. We have become more aware of the diversity in our culture and the needs this diversity creates.

What we have to do now is start anew to develop areas of consensus. These will necessarily be small at first. They should start with some teachers and students who are interested in a particular problem developing what they feel should go into an elective course. This applies not just to medical schools but to education as a whole.

In relation to the medical school reorientation to educate physicians for a greater diversity of roles would involve not only broadening the curriculum but also the kinds of people who are admitted. Our definition of the medical school will have to be enlarged. Rather than being a professional school in the present limited sense, the medical school will need to take on a broader identity as part of a health university.

Health Care as an Institutional Process

Drs. Mauksch and Straus pointed out that one cannot talk about health care without being basically concerned with man and human behavior. Nor can we talk about health care as a system without talking about other systems that comprise organized human behavior.

Man's systems of behavior emanate from basic needs. These become focused on goals and expectations which interrelate with the various systems of behavior man has devised for himself as a social being. These include the system of family relationships; the religious system, including the behaviors through which man copes with the spiritual or unknown aspects of living; the education system; government; the military system; the economic system, including production and distribution; the recreation system; and the system of medicine and health care. Some of these systems seem to have been universal throughout history; others have recently emerged with independent identity.

The way people behave within a system grows out of the relationship between the basic biological nature of man and the environment in which he liyes and in which the system operates. People also tend to behave according to the behavioral norms of a particular system, adhering to its customs, values, beliefs and laws. These in turn are associated with the material and technological aspects of the culture; for example, behavior is influenced by the level of contraceptive technology in the culture. All of these factors function in an interrelated way.

To understand how a system like health and medicine interacts with other behavioral systems of man, we must examine it in a hierarchy of choices involving value judgments and competing needs. Health professionals must realize that the way people react to illness and the health and medicine system is due in part to the competing demands of the other systems of which they are also a part. For example, people are part of the economic system; they have economic needs. They are part of the family system, and they have certain responsibilities toward their families. Fulfillment of these needs and responsibilities may conflict with fulfillment of the demands of the health and medicine system, so we have alternate responses to illness. Few people who become ill simply go to their physician and then follow through on his instructions in a completely faithful and exclusive way. They postpone action; they work out compromise solutions that enable them to respond at the same time to the demands of the other systems of which they are a part.

There are many ways to look at the medical care system and its interrelationships with other social systems. We can look at it as a social enterprise that has a mandate to fulfill. We can look at the processes it goes through to achieve its output of patient care. We can look at its structure, and at its distribution of status and power. Sometimes these structures, rooted deep within the medical care culture, interfere with the quality, efficiency and effectiveness of patient care. Trained personnel may be underused, overused, or misused. In hospitals, established interactions among physicians, nurses, dieticians and other personnel may become rituals which fail to enhance the quality of patient care. Patient needs may get dropped under the desk because there is no provision in the system for effective communication among those who take care of the patients beyond that ritualistic gateway to bureaucracy, the patient's chart.

We might also look at the health care system in terms of what proportion of the tremendous aggregate of knowledge, health resources, money and technical energy invested in the system actually benefits the patient. We might look at the allocation of resources; for example, what level of attention should be given to something like heart transplants as opposed to a problem like rat control.

We can break the health care system down into components for more detailed examination, such as the components of patient care within the hospital. One component is clinical decision-making, which is normally done by the physician. There is care given by nurses, and care given by other health personnel. Sometimes these various types of care are additive. Sometimes they are non-integrative, and the quality of patient care becomes a function of the communication that takes place and the level of integration of all the components. To identify deficiencies in the system and determine what changes should be effected we must consider the needs of the patients, the requirements of care, and the mechanisms of the system.

The hospital represents a subsystem within the health and medicine system. Its overall goals may include organizational efficiency, medical excellence, social purpose, the well-being of patients. Its specific goals in relation to the patient include the medical goals of the physician for the patient, the expectations of the patient himself, broad social goals for the individual patient or for all patients, and the particular goals of many categories of functionaries who work in the hospital.

Most research on hospitals today is concerned with the needs of people other than patients. More hospital research should be directed toward patient-centered goals. Society has high expectations of what medical science can achieve, but the health and medicine system is creating an increasing gap between these expectations and the ability to produce results. We need to analyze the totality of what a hospital can do to and for a patient, and how this result coincides with the physician's goals, the patient's goals, and other social and individual goals that make up the whole.

We should examine the process of hospitalization in terms of the interrelationships of people, techniques, apparatus and activities as they contribute to or interfere with patient-centered goals. We should also be alert to what effect the outer forces of the society in which the hospital exists have upon fulfillment of the system's goals.

In analyzing any system, it is important to look at it in its historical and evolutionary context. In our society, hospitals are descended from institutions which were set up not for the benefit of the patients but as a means of protecting healthy people from those who were considered a threat to the well-being of the larger society. Even when a patient-centered, humanitarian concept began to emerge, hospitals continued to be primarily institutions for the indigent sick, the mentally ill, the terminally ill and other rejects of society.

The concept of "confinement" associated with women in childbirth developed out of the fact that so many women died in childbirth. Beliefs associated with death were so closely associated with the concept of threats to society that pregnant women were isolated as if their vulnerability to death posed a threat to society.

This historical concept of incarceration, confinement and isolation in hospitals has carried over far beyond the functional purpose of the ideas originally associated with it. The patients in a hospital have little sanctioning force, both because of the influence of these traditional attitudes and because their place in the hospital is a transitory one. They have little opportunity to mobilize complaints, and their suggestions about ways that they could be made more comfortable or allowed to rest better are not taken seriously.

Another factor is that certain of the functionaries in the hospital system also play a transient role. Physicians, for example, are in and out. They spend a relatively small proportion of their time in hospitals so they are not apt to analyze the effectiveness of the structure of the hospital system or the interactions of the human beings in it. We assume the physician is in a position of authority, but he is, in fact, in a position of less authority in the hospital system than some of the people who are there all the time.

In studying the hospital system in terms of functional theory, we can see some analogies to the system of a factory. Industrial sociologists have done numerous studies which show that the level of production and therefore, presumably, of profit, is improved when the traditional production line approach is abandoned. Instead of having each man turn a particular screw or push a particular lever, factories have experimented with breaking the job responsibilities up in different ways. In the model ultimately used in one typewriter factory, each worker was assigned to produce an identifiable segment of the typewriter. These segments were designed in increasing levels of complexity, and the worker could gain promotions and salary increases by earning the right to produce a more complex unit. Identification with the unit the worker assembled was stressed, and he got almost immediate feedback on the quality evaluation of his product.

In this same factory, a number of sanctions against the human interactions of the workers were dropped. Workers were allowed to talk freely with each other, smoke, have coffee breaks. Emphasis was placed not upon prohibitions but on the rewards the workers could earn by maintaining a high level of productivity. Favorable results on both quantity and quality of the product were noted.

This experience suggests a number of lessons about various combinations of people that can be tried in relation to "production units" whether the "product" is an object such as a typewriter or a result such as improved patient care. Hospital care in the United States has swung from the extreme of one private duty nurse per patient to an increasing extreme of fragmentation. Ironically, at a time when many factories are trying to humanize their production systems, hospitals are dehumanizing their service system. The possibility for personnel to identify with the object of their activity, the patient, has almost been eliminated. A nurse whose job is to give medication to 65 patients not only cannot know the patients individually, she has great difficulty even knowing whether she is giving the correct medication to the patients. Many hospitals have even given up trying to have the same worker cover the same 65 patients from one day to the next. Numerous studies have been done to measure the number of people who come through the patient's door during a 24 hour period or during a hospital stay, the numbers of different hospital personnel a patient must try to relate to, and the numbers of different patients that each hospital worker must relate to.

Dr. Straus proposed a group of experiments in which the activities of the functionaries of a hospital are realigned in relation to the goal of better patient care. We need to experiment to see what happens when fewer people do more things for smaller groups of patients. One such experiment is now in progress at Vanderbilt. This involves an attempt to have one nurse and one general health worker responsible for the entire care of a particular group of patients, other than those functions requiring the attention of the physician.

Hospitals have become very dysfunctional organizations. We have been too much inclined to accept the increasing costs, the increased impersonality, and the increased number of errors that are occurring. It is high time we subject the hospital care system to rigorous study.

Changes cannot, of course, be brought about overnight. It is a matter of slow progress, of making little dents here and there until the legitimacy of various approaches has been tested out and accepted and finally incorporated into the health care system.

One way of bringing about the necessary changes is through changes in medical education which will make students more aware of the way the health care system functions and the need for alterations in the system. Part of medical education should prepare students to contribute to improvement of patient care when they enter practice. Medical students approach their education with a variety of motivation and orientations. Both they and members of the faculty range along a continuum from a predominantly scientific orientation to a predominantly humanitarian outlook, and medical education needs to be flexible enough to be responsive to individual student interests and motivations.

Dr. Mauksch suggested that the objectives of the curriculum unit dealing with the health care system might include instilling in students:

- an appreciation of the interdependence of the components of health service agencies and occupations
- recognition and preception of the principles of systems theory as they apply to the health industry
- appreciation of the involvement of the health care industry with the economic and political life of the nation
- awareness of the scope of health resources available at the national, state and local levels
- ability to identify health care needs and the characteristics of the most pressing problems
- capacity for involving themselves in the assessment of a segment of the health care system or participation in it.

Further curriculum objectives relating specifically to the hospital as a subsystem of the health care system might include enabling students to:

- gain knowledge of the physical and functional interrelationships of the human, organizational and physical components of the hospital system
- become aware of the roles, functions and interdependence of various occupations within hospital services
- understand the principles, premises and implications of the organization of the hospital as a component organization and as a processing plant for human services
- understand the behavior of various professions and the way they are organized as social responses to public needs and

mandates as well as means of maintaining their own interests.

Fulfillment of the educational objectives in just this one knowledge area could easily occupy a two year curriculum, and it is probable that not all of them can be achieved in the course of medical education. It is therefore necessary to assess which areas are most crucially needed in the knowledge repertory of future physicians.

At the University of Kentucky, Dr. Straus said, a basic course called Health and Society centers around five major content areas:

- a unifying concept of man
- medicine as a system of behavior and its relation to other major systems such as family, religion, economics and government
- human response to illness
- the social structure of medicine
- social problems as they relate to health.

Initially this was a 60-hour course which commenced at the beginning of the first year of medical school. It relied heavily on the lecture format, with a few seminar sessions. The course has now been shortened to 48 hours. In response to student interest, the balance has been shifted so that seminars now absorb a greater proportion of the time. The first five hours of the course are devoted to an introductory conceptualization in which case materials are used to highlight objectives. Students then select three topics from a list of 15 to 20 possible choices. These they pursue in greater depth in laboratory experience and seminars which meet six hours a week for two weeks. Members of the clinical faculty as well as the behavioral science faculty participate in the seminars. During the final two hours of the course, students are asked to discuss the course and how the things they learned relate to each other.

In subsequent years, students may continue along the same general lines on an elective basis. Experience at Kentucky indicates that students respond favorably to seminars devoted to such topics as medical organization and patient-centered goals, physician-patient relationships, the role of the physician in sex education and family planning, concepts of normality and abnormality, human response to illness, quantification and qualification in medicine, and contemporary social problems related to health and illness.

Dr. Straus said that there has been a fantastic change in the past ten years in the interest and educational backgrounds of the students who come to medical school. At Kentucky, ten years ago, only five students in the entering class had had a single course in any of the behavioral sciences. In the 1969-70 school year there were fewer than five students who had not had some behavioral science background, and many of them had undergraduate behavioral science majors. To respond both to the need for changing patterns of health care and to the expanding interests of medical students, medical education must be redesigned to relate closely to the human needs of patients and their legitimate expectations of what the medical care system should be able to do for them.

The Multipractice Specialty Group

Dr. Ralph E. Cole, co-founder of a multipractice specialty group in Chelmsford, Massachusetts, said that such a group can provide better care at less cost than the outpatient department of a major hospital. Even though a third of the payments his group receives are provided by Medicaid, Medicare, and Aid to Families with Dependent Children or some other third-party source, the group is able to provide care at about 75 percent of the cost of care at the outpatient department of the hospital. These costs could be cut much further if the group had control of a hospital to which its patients could be admitted. In spite of this, the idea of a physician being a successful entrepreneur capitalist rouses a great deal of hostility.

Dr. Cole founded the group, he said, primarily because he felt it was a way to improve the quality of care which would work to greatest advantage of both the consumer and the physicians. Consumers still want to find that *rara avis*, the man with the little black bag who climbs the stairs to the second floor to deliver medical care in the home. And there are still many physicians whose principal motivation is the desire to help people get well and stay well, and who feel the environment and method of delivering medical care are important factors in how well they can perform this function.

All members of Dr. Cole's group are required to make house calls. When this first became known, the demand for house calls was heavy. Each doctor averaged eight to ten house calls per day. Now, in the same community, with a greatly increased practice, the doctors average fewer than two house calls per day. House calls are like sleeping pills, Dr. Cole said; people just want to know if they are available. If a patient has a doctor he trusts who prescribes sleeping medication, he will find he doesn't really need the pills and they will last a long while on the bedside table.

The group operates from 8 a.m. until 7 p.m. six days a week for two reasons: people are sick at all hours of the day; and, because of the huge capital investment involved, it is more economical to operate the service with full staff throughout the day and early evening.

Members of the group also staff storefront clinics in a nearby city and teach a course on the delivery of medical care. They receive no pay for either of these activities. This is vital, Dr. Cole said. The minute you start to pay them for these services, they begin to compete with what it actually costs to support a physician in the group, which is between $28 and $36 an hour. Yet they will readily give their time without charge for these activities and find them both stimulating and rewarding. These contacts, they find, cause them to reevaluate many of their own attitudes and preconceptions. The income per year in group practice is no greater than in individual practice, but the opportunities to expand and experiment with new ways of delivering care enhance the rewards. Even in the somewhat hostile environment of a tradition-bound New England community, Dr. Cole said he has interviewed over 200 board-qualified physicians who have expressed an interest in entering this form of practice.

The course in delivery of medical care was initiated because Dr. Cole felt the medical schools tended to function from an ivory tower base unrelated to the realities of patient care. Initially the course was not affiliated with any medical school, but it later became so.

In order to be successful, physicians need a good grasp of human behavior, Dr. Cole said. They need to understand the competitive attitudes often found in the medical associations. They need to understand the fund-raising, grant-seeking focus of university-affiliated doctors which perpetuates the dichotomy between research-oriented physicians and those in practice. They need to understand the behavior of patients, the kind of relationships with their doctors they want, the kinds of medical care they will accept and use. Medical education needs to break away from traditional molds and help students progress toward their aim of delivering medical care in ways that will be rewarding both to the patients and to the physicians.

The Total Health Care Center

Three representatives of the Salud Health Center in Woodville, California described its innovative approach to the delivery of care. Miss Leona Judson is a public health nurse. Mr. Christopher Braga publishes a newspaper in connection with the work of the center and serves as liaison with other community agencies. Mrs. Tina Braga works at the clinic and with local youth groups.

Salud is a Spanish word meaning health, and the clinic is located in an area with a high percentage of Spanish-speaking families. Woodville, where the clinic is located, is a crossroads town of about 1200 people in the heart of the San Joaquin Valley, a principal agricultural area of California. The clinic serves about 2700 families in a radius of some 15 miles surrounding Woodville. In most of these families, about five members are served. The potential caseload is, of course, much greater.

Most of the families are low income agricultural workers, and more than half are Spanish-speaking. There is a small community of Filipinos, and the clinic serves a nearby Indian reservation. Most of the Anglos are also low income level families, but there are some middle class white patients. Although many families follow the migrant stream for two to four months each year, they return to the area, which is a home base to them, in time for the start of school in the fall.

Salud is founded on people's needs, its representatives said. The clinic was started two years ago by a physician, a medical sociologist, and a public health nurse. It was conceived as an experiment in living and developing total health care, and its philosophy and mode of operation are heavily influenced by the sociological as well as medical backgrounds and interests of the founders.

Mrs. Braga described the underlying philosophy of Salud. The concept of total health care means families, it means food, it means housing, it means shoes, it means clothes, she said. It means self-development and self-satisfaction. So the founders moved into a huge building, opening a clinic in one small part of it, with the idea of developing other services in the rest of it.

The idea was not for outsiders to come in, but for insiders to grow as much as they could in their own community. The clinic had to be professionally staffed and that meant bringing in some outsiders because there were none inside. But there is a rule that there must be two community people on the staff for every health professional, and control of the program rests in the hands of the people who work at the clinic. Each week a meeting is held which is mandatory for all staff members. At this meeting all decisions regarding hiring, salaries, working conditions, clinic hours and new directions in the program are made—in fact, all decisions except those relating to patient care. Each staff member, from the janitors to the doctors, has an equal voice and an equal vote.

This is an important part of the philosophy of the project, but it does create some problems, Mrs. Braga said. Some of the community people, brought up in hardship, can't see beyond their stomachs. They have little conception of long range goals and ideals. They like the feeling of people working together; but they find it hard to understand futures. Things like "non-profit organizations," "by-laws" and "corporations" are not part of their background. This sometimes makes it hard to progress. You can't have effective community control until the community understands what something is all about. Salud is working to build this kind of understanding, but it is very difficult.

Miss Judson and Mr. Braga described the specific structure and activities of Salud. Because most people in agricultural areas go to work very early and come home late, the clinic opens at about 11 in the morning, remains open late, and has at least one of its several doctors available at all times. The formal clinic atmosphere is avoided, and the waiting room looks more like someone's living room than a clinic. Many services are offered under one roof, and a team approach to treatment is used. In addition to laboratory facilities, an emergency room, dispensary and other medical services, the center offers some psychiatric services, occasional legal counseling, and assistance with social welfare problems, obtaining insurance benefits, and so on. Patients are also referred to a traveling dental clinic which serves the area.

Salud is a non-profit organization which is supported in two ways: by payments from MediCal, the State program of medical assistance, and by fees for service paid by the patients themselves. Fees are based on a sliding scale in which a seasonal farm worker with many children pays less than someone who is regularly employed and has only one or two children. Family size rather than income level alone is the deciding factor. Eligibility for MediCal is determined by the welfare department rather than by clinic staff.

Federal grants would be available for support of the clinic, but the staff prefers to retain its freedom to shape the program its own way and also to avoid developing a pilot program which will fall apart as soon as the grant expires. Knowing that the clinic does not have money coming in from outside sources, the people of the area feel obligated to pay for the services they receive. This has a better effect on them than charity would have. They feel that the clinic is theirs and they have a share in it because it is from their lives and their money that it has been created. They are proud of it, and this gives them pride in themselves.

The program usually operates in the red, because of this limited financial structure and also because MediCal often lags six to eight months behind in its reimbursements for services rendered to patients. Part of this lag is due to problems of processing payments through the computers. Part of it is due to the sheer volume of payments involved. During the winter months when many agriculture workers are unemployed, 65 to 70 percent of the patients are on MediCal. And part of the delay is due to disagreements about what services are and are not necessary to patient health and are or are not reimbursable. For example, MediCal will not pay for multiphasic screening. The clinic would like to order profile blood studies, chest X-rays, and EKGs as routine procedures but these are not covered under the present insurance system in California.

The professional staff members who come to Salud believe deeply in its philosophy. By deliberate choice, their salaries are kept on a par with the residents of the community. The highest salary anyone, including the physicians, receives is $250 a month. Some fringe benefits are available, such as reimbursement for mileage for people who use their own cars in their work. Staff members who have sizable debts to pay are allowed to earn additional amounts specifically for this purpose. Even so, the income is at subsistence level. This makes recruiting difficult. It took about a year and a half to attract a second physician because of the rural area and low salary. But the salary control is part of the philosophy of the program designed to keep the clinic close to the people it serves.

The isolation in which a physician finds himself in a rural setting is often a serious problem. He is not only cut off from medical colleagues but he often has few medical resources available to him. At Salud, several doctors and professional people of other disciplines work together under one roof, which helps to reduce professional isolation.

The Salud doctors are members of the county medical society. There was considerable resentment of the clinic at first, but the relationship with the medical society has become more harmonious.

Additional Salud clinics are planned. Some of the physical facilities, like X-ray equipment, will be available in each clinic, but the same professional staff will service all of them. The principal purpose of opening additional clinics is to provide services and manpower training where the people are. To many of these people, a town 22 miles away is an alien world, and they will not travel that far to obtain medical care.

This has other ramifications. One reason people do not travel 20 miles to a clinic is that they have no transportation. Salud sees its responsibility as being not only providing health care but improving the quality of life in general for the people of the area. This means, among other things, creating jobs. Consequently, to solve two problems at the same time, the center would like to set up a bus line which would provide jobs for a certain number of people and also provide much-needed transportation for patients.

Other projects are planned. A child care center is greatly needed. Salud also plans to involve itself in the improvement of housing. There is not much point in treating someone for a chronic respiratory problem if the house he lives in has a leaky roof. In January, 1970, a construction engineer experienced in self-help housing joined the Salud staff. At that time, it was not clear exactly what directions the construction program would take, but the Salud staff felt strongly that housing problems are closely related to health problems and solving one would help to diminish the other.

Salud is trying to confront unacceptable illnesses and problems like drug addiction, obesity, nutrition, abortion, alcoholism, and the effects of pesticides. These are problems that most medical practices try to ignore because they don't know how to deal with them. Salud is trying to bring such problems out in the open and find workable solutions. For example, in the conservative county of Tulare, the clinic was instrumental in testing out the new State law on abortion and succeeded in getting the necessary medical boards set up which made possible approval of the first two therapeutic abortions in the county.

Several research projects are in process at Salud. One centers around the use of methadone in the treatment of drug addiction. The study started with seven addicts and by the fall of 1969 included 28. They meet in encounter groups and police their own behavior. Salud's principal contribution is to try to help the addicts get jobs and get back into the community as productive people.

A nutrition study led to some unexpected findings on the effects of pesticides in a random sample of children, and the California State Health Department decided to sponsor a study on the problem. Salud serves as a primary data gathering area. Preliminary screening is done there, and patients whose urine tests indicate residual pesticide effects are referred to a clinical laboratory in Tulare for more detailed study.

Clinics in rural settings face severe shortages of trained health manpower. At Salud, the manpower shortage is attacked through training on three levels. First, high school students are brought in to observe and work in the program, with the hope that they will continue their education and go into the health services field. Second, adults from the community are given on-the-job training and become salaried members of the Salud staff. This not only eases the health manpower shortage but provides a significant amount of employment for residents of the area. Third, medical students and others in related fields work at Salud during the summer, not only providing services but gaining valuable first hand experience in the problems of community health care which may influence the directions their careers take in the future.

For the most part the staff people at Salud welcome the idea of medical students coming into the project. But one student came in who was a Marxist and wanted to change the whole community to fit his own political ideology. The community threw him out, Mr. Braga said. They didn't want any part of him because he was not really thinking in terms of people's needs but in terms of his own political beliefs.

In a medical school, Miss Judson said, a student does not learn how to practice medicine. He learns how to diagnose, how to give some indication of the necessary treatment, but there are many things he needs to know about the actual practice of medicine that he does not learn. He is not taught how to set up a clinic, or how to go about staffing one. Most doctors know virtually nothing about how to finance medical care or about the various welfare categories and health insurance programs. They know it is useless to prescribe a kind of care a patient cannot afford, but they do not know what solutions there may be to the financial problems.

Students receive inadequate grounding in coordination of paramedical services. They are not taught enough about how to work with pharmacies, laboratories, nursing services, social work services, or other community resources. They need to know what resources are available, how to get in touch with them, how to work with them.

Medical education also provides inadequate understanding of the social context in which patients live. What good will it do to prescribe a 1500 calorie diet for a patient who has no idea how to translate this into his own day-to-day living? Or to prescribe sophisticated medical treatment for people whose attitudes toward illness and treatment are highly conditioned by folk beliefs?

Most medical students are taught very little about how to deal with people. They are taught to deal with "cases," but when they are confronted with real live people in their normal environment, they are terrified. Some students who come to Salud are so frightened by the experience that they flee as quickly as possible; others are so excited by the possibilities that they change their majors to community medicine.

Part of the inadequacy of medical education derives from the orientation of the medical school faculties. Few of the members have any experience in working in rural areas, so they do little to orient students in that direction and may even frighten them away from such settings. Few opportunities exist for internships and residencies in rural settings in which physicians could test out whether this is the kind of work they really want to do. This should be changed. The possibility of setting up a rotation for medical students to go into community medical services needs to be explored more extensively.

Mrs. Braga eloquently restated the goals of those who are affiliated with Salud and challenged the conference group to bring about improvements in health care through medical education. As she put it:

> Too often, people seem to be studying community projects just to be studying. They are not studying to bring about change. They visit projects or they come to conferences and they talk and they study; but if no changes come out of all this for people who have health problems, none of this is worth anything.
>
> What I want to see is doctors in communities. I want to see doctors in rural communities. I want to see doctors with love in rural communities.
>
> And that is what we have in Salud.
>
> I would like to see medical schools involving their students, students who want to join something like Salud.
>
> I would like to see medical students coming out, not only to Salud but to other clinics that are starting, to help in day-to-day happenings, to gain an attitude of caring for people, for each other.
>
> And that is what we have in Salud.

The Salud staff recognizes the need for objective analysis of the success of various aspects of its program. Salud does not pretend to provide all the answers to the problems of medical care, its representatives said. It is only one model of a community health program. Thus far, it appears to be working in its particular setting. Parts of the experience there can, perhaps, be incorporated into medical education and applied with value in a variety of settings.

EDUCATIONAL PROCESS

> The revision of medical education . . must move from substantive concerns to process concerns. It must focus not only on what behavioral science concepts students need to know but on how they learn.
>
> Students have a particular repugnance to the way they are being taught. They are just being asked to accumulate facts . . . (They) are tired of this force-feeding approach.

Discussion of process in medical education centered around curriculum design, teaching methodologies, evaluation of behavioral science teaching and evaluation of student performance. Within these areas, the topics most stressed were the value of the individualized curriculum which enables students to prepare for the kinds of medicine they plan to practice, and the value of direct experience with patients throughout medical education.

Curriculum Design and Methods

> By trying to fit themselves into the existing system of medical education, the behavioral sciences are racing to catch up with something that is already outmoded.
>
> The curriculum needs to be restructured so that it comes out not being medical education with a dash of behavioral science education thrown in but a whole new entity of health science education.

If the behavioral sciences continue to think in terms of isolated chunks of core concepts and information, they will soon face the problems that anatomy and biochemistry are facing now, the conference participants said. They need to orient themselves toward genuine integration with biological and clinical material, both in terms of content and in terms of time.

The types of behavioral science training to be offered and the appropriate points of entry into medical education can only be determined in relation to existing conditions. It is necessary to know where the students are in their training, where medical faculty and house staff are in their thinking and attitudes, where the behavioral scientists are in terms of their own background and training, where the postdoctoral and continuing education people are, and where the institution as a whole stands in terms of receptivity and support of the behavioral sciences.

Medical schools differ in the degree of attention they will allow students to devote to the social and emotional history of the patient. Some flatly rule it out. In others, weekly conferences held jointly by medical house staff, medical students, the social service department and behavioral scientists are very successful in pointing up pressing social problems which affect the patient's medical status, such as his level of income and his family situation.

Because of the great variation in the climate of different schools, in the orientation of behavioral scientists, and in the interest and background of students, the behavioral sciences are taught in a variety of ways. Two primary orientations and two content emphases can be identified in the way the behavioral sciences have been presented.
These are:

- basic science of behavior orientation
- applied or clinical science of behavior orientation
- biopsychological emphasis
- socio-cultural emphasis.

Elements of these four approaches overlap. For example, at the University of Kentucky College of Medicine, behavioral science is taught as a basic science, and the content emphasis is predominantly socio-cultural. The heaviest input is from the disciplines of anthropology, sociology and social psychology. Relevance for medical students is established through extensive use of illustrations of medical problems in which these disciplines have a role to play.

The clinical or applied orientation with biopsychological emphasis has been widely used. It is based on a growth and development approach to the teaching of the behavioral sciences. It is essentially psychodynamic and is keyed to the application of the tasks of psychiatry. It includes a tripartite arrangement consisting of the basic psychological concepts of perception, memory and cognition, plus growth and development and some emphasis on socio-cultural factors. The clinical or applied orientation with socio-cultural emphasis often stresses the behavioral components of community medicine.

The University of Michigan Institute and the Pennsylvania State University Medical College at Hershey are examples of schools which started out using the biopsychological content emphasis to present the basic science of behavior. At Hershey, the current formulation is more comprehensive, including both biological and social emphases and both basic and clinical orientations to the science of behavior.

At present, about six different curriculum models are used in presenting behavioral sciences in various medical colleges. These are:

- introduction to psychiatry
- introduction to one of the behavioral science disciplines, such as sociology, with a smattering of information about the other behavioral sciences
- introduction to many of the social sciences, with professors of sociology, psychology, anthropology, etc., called in to offer five or six week minicourses in the basic concepts of their own disciplines
- multidisciplinary courses centered around a single unifying theme such as human ecology
- behavioral science units within such courses as pediatrics, surgery or physiology in which the behavioral components of a particular problem like stress are presented
- synthesized courses in which the basic concepts of all the behavioral sciences are presented as a common core of knowledge relevant to all fields of medicine.

Part of the task in defining guidelines for medical education is to discover at what points different descriptions of man can be merged effectively to show how the social and cultural determinants of human behavior feed into biological process and how biological process reflects both the uniqueness that is built into each individual and the ways our evolutionary past conditions our present behavior. Most of the participants stressed that behavioral science material should be integrated into medical education throughout the entire span from the premedical years through continuing education long after the physician enters practice.

Timing is an important factor. Forcing a student to take a block of behavioral science courses at a time when he is not ready for them may cause him to withdraw from any type of sociological or psychological orientation. Unless the material is integrated into the curriculum in a way that enables him to see its relevance to his educational and professional goals, he may be completely turned off by it. Later, when he gets into his third or fourth year, he may realize that the material to which he was exposed earlier was more relevant than he realized at the time, but by this time, when he is ready to grasp and understand it, he has no time available for it in his curriculum.

Behavioral science concepts need to be broken down into what the student is ready for in year one, what he is ready for in year two and year three and during his internship and residency years. These concepts need to be fed into the curriculum at the appropriate time so that by the time the student becomes a physician, he will have reached the desired behavioral science goals. Unless the interests and sensitivities students develop through their first year courses are constantly reinforced, they retrogress under the pressures of the rest of the curriculum, particularly since students often lack role models who are oriented toward the behavioral sciences. As they move into work with house staff in their third and fourth years, students encounter many physicians who are coldly clinical in their outlook and have no concern with the finer points of the doctor-patient relationship. Fortunately, most of them do also encounter physicians who are warm, understanding, and good at communicating with patients. This helps the students carry over the attitudes and ideas they have absorbed earlier.

Even so, they need additional behavioral science courses in the later years of their medical education because of the change in their own perspective. During the student's first year, he undertakes his behavioral science projects as an "outsider" to the medical profession—a non-physician. As he moves closer to becoming a physician, he needs the chance to absorb the behavioral science approach from the viewpoint of an "insider" as well—as a future physician who will be applying behavioral science principles in the practice of medicine.

It may be difficult to involve medical students in the behavioral sciences once they get into their clinical work if they have had no previous exposure. When the student enters his clinical year, what he is most interested in is getting to know how to cope with patients in the medical care system. He doesn't really want to be distracted at this particular time by all of the broader issues the behavioral scientist raises.

Far more behavioral science knowledge exists than can possibly be included in medical education. How new areas of knowledge can be integrated into medical education without creating unbearable time pressures is difficult to say. Each discipline has its own priorities; each wants "a few more hours" of the medical student's time. Using traditional pedagogical techniques, medical education would have to expand to cover about 15 years of a student's life if all the desirable information were to be included. Something has to give. Overall priorities must be set encompassing the key concepts of all relevant medical and behavioral disciplines. Then current allocations of time must be examined. It may be necessary to scrap some traditional approaches—some research courses, the traditional internship perhaps. It may be necessary to modify undergraduate requirements. We cannot simply go on adding to the cumulative total of knowledge the medical student is expected to absorb.

Therefore, we have three options. One is to cover everything at a superficial level. This would be of little use to the student. A second is to teach particular concepts in sufficient depth that students can understand them thoroughly and apply them. For example, a student who is particularly interested in diagnosis and prognosis might wish to know how to use mathematics and computers to get the best possible decision. This will necessarily take a considerable amount of time to teach him. If 30 hours of curriculum time are devoted to this, it must obviously be at the expense of something else. Whether it is the most important use of time depends on what he plans to do.

The third alternative may be the best choice. We do not have to choose between teaching everything superficially or a few selected topics in depth. We can teach a few things as examples of approaches to particular types of problems, and teach the student where the resources are to help him cope with problems he will not have enough knowledge to handle alone.

One specific approach to presentation of behavioral science material is to begin with an overview which moves from the human body, to the person, to socio-cultural factors. This is a reasonable theoretical approach, but it may not capture the interest and acceptance of either the medical faculty or the students. An alternative—which requires considerable professional courage and self-assurance—is to begin with patients, with case histories, with problems, and gradually move with the student into an overview of the general system.

However, many participants suggested that medical students should first have an effective introduction in which behavioral and social scientists and clinicians offer combined presentations of such bodies of knowledge as medical anthropology and medical sociology. Later, during the third and fourth years, the student should be given opportunity to pursue in-depth experience in one behavioral science area which interests him particularly. For example, a student might elect deep study of sociological theory or psychological theory as it applies to clinical practice.

There are several logical points of entry for the behavioral sciences in medical education. One is the "cafeteria approach" or the elective system in which medical students can choose what they wish to study. This may or may not lead to a "balanced diet" of the behavioral sciences.

A second possibility is to present the behavioral sciences in a systematically organized range of opportunities within the elected system. A third point of entry has to do not with curriculum but with admissions. Interest in the behavioral sciences can be encouraged by the selection of students who not only show a capacity for biological sciences but also score high on social awareness and concern.

Fourth, behavioral science research is of demonstrable value to medicine, and building a good research program is another way of ensuring student and faculty exposure to the behavioral sciences in medical schools.

A fifth point of entry might be organized school-wide retreats in which students and faculty put aside other concerns at scheduled intervals to discuss contemporary medically-related social issues in depth.

A sixth point of entry is through a variety of continuing education opportunities, including summer courses to bring physicians up to date on what is new in the behavioral science field as it relates to medicine. With the dynamic changes that are taking place both in available knowledge and in medical care needs, no physician can function effectively throughout 40 or 50 years of professional practice on the basis of the four to eight years of formal training he got X number of years ago. A broader range of traineeships and fellowships should be made available at all levels from undergraduate through postdoctoral studies, and these should be available both for United States students and for physicians from other countries.

In each medical school, the curriculum structure reflects the concepts and personalities of the people who develop it. In one school, biobehavioralists may be conspicuously absent; in another, sociologists may feel they are out in left field with nothing to do. Although a desirable balance needs to be found, we should not fall into the trap of trying to devise one curriculum or even one course that every school must teach the same way. The curriculum needs to remain flexible so that new ideas and varied approaches can be tried out.

As long as the medical schools and the students themselves continue to focus on a single type of graduate, the practicing physician, certain constraints will be imposed on the ability of the curriculum to respond to recognized needs. The focus will continue to be on biological and clinical training and the behavioral sciences will be seen only in terms of their pragmatic value in making diagnoses. True education is simply not possible within a curriculum containing a tremendous information overload and designed to produce a product in the shortest possible time.

Many discussions of curriculum change in the medical school focus upon substantive manipulation. Reorganizing substance becomes a compelling but reassuring procedure like the way a worried manager of a faltering enterprise reassures himself by making a lot of symbolic changes in the organization chart of his business. In terms of the overall effect of the behavioral sciences in medical education, the design of the curriculum may be less important than what the behavioral sciences do to affect the faculty, the selection process and the total environment of the medical school. It does not much matter whether the emphasis is experiential or content-oriented, disciplinary or interdisciplinary, strip or block, lecture or informal discussion. What is important is the underlying conceptual unity and the quality of teaching.

Individualizing Medical Education

> The curriculum might be organized along the major-minor requirement base used in the liberal arts colleges so that the student could elect the studies that would lead him closest to his personal goals.
>
> The beauty of the elective curriculum that the student would like to see put in . . . is that it is a balanced deal . . . The student can select among courses with advice from faculty . . . This seems to me a very wise faculty initiative, student choice.

The most serious problem facing medical education today, most of the participants indicated, is that the vast accretion of knowledge the curriculum contains has become an inflexible mass which all students are forced to swallow regardless of their individual professional goals. As the explosion of scientific knowledge has caused more and more courses to be added to the list of requirements, the medical colleges have taken on an atmosphere of communication overload. Faced with an impossible expectation that he master all of the information brought to his attention, the student learns how to select those areas of knowledge that will insure safe passage through the sequence of examination and promotion procedures. Under these conditions a more conservative orientation is reinforced. Biological and biochemical events are given greater emphasis, and the curriculum is revised to keep up with the explosion of knowledge *within* these scientific areas. Time is so scarce there is little desire to expand the scope of relevant sciences to include the sciences concerned with human behavior.

The problem is not how to ignite student interest in learning about behavorial components of medical problems. Many of them are fully aware of the importance of behavioral science concepts and want to know how to apply them to bring about individual, social and institutional change. But the rest of the curriculum smashes in on them. They have to devote so much time and energy to studying the orthodox subjects and preparing to pass their Boards that they have a hard time hearing the message of the social and behavioral sciences in spite of their high level of interest.

No one is trying to say that all medical students should be prepared to become medical behavioralists or to provide comprehensive care in community health programs. Many students would be turned off by these ideas and would be much more at ease in specialized fields of practice in the traditional mold. There is nothing wrong with that. If a patient has something wrong with an enzyme system in his kidneys or liver or brain, the specialist is invaluable. But a legitimate role for the behavioralists must be added to medical education.

Since medical schools have a variety of types of students, some of whom are interested in the trade school approach and some of whom are interested in the broader educational approach, the schools cannot help being both trade schools and university centers. But at the present time, they are not doing either one very well. One of the most important roles of the behavioral sciences is to help the medical schools find ways to relate the curriculum more realistically to the demands of different types of practice and the interests of different types of students.

All of the students and most of the other participants seemed to agree that some sort of tracking or major-minor system which allows a student considerable freedom of choice in curriculum is the logical solution to this problem. A trend in this direction is already evident, they said; and elective tracks are working well in many schools.

Under this plan, each student would have an advisory committee consisting of a clinical scientist, a basic scientist, a behavioral scientist and one other person. This panel would explore the student's interests and advise him on what type of curriculum they felt it would be best for him to follow. This would be based on one of several different curricula that had been developed in general form. There would be one for pediatrics, one for surgery, one for community medicine, one for students who plan to become primary physicians, etc. Students who were not sure what they wanted to do could first get a broad conceptual base and later move into the major-minor approach.

These curricula for different types of physicians would overlap, so that some of the courses would be required in all curricula. All students would get a basic set of concepts and information, but the individual student would not have to waste his time taking whole groups of courses he would never use in his chosen field. He would then have time for the experiential and problem solving approaches to medical education which are crowded out of the present curriculum by the overload of required courses.

It would be the responsibility of the panel to determine the relevance and appropriateness of any particular aspect of the curriculum to the student's field of medical interest. What the student would expect of his panel members would be for them to help him become the best physician he can be in the particular field of his interest without having to go through a ritualized program that requires an inefficient use of his time. If enough people on his committee felt that a particular area of knowledge was important for him to have, his dialogue with them would help him understand why they felt he should have it and how it would enhance the value of his individualized program. About 80 percent of the students would probably still elect a more or less standard curriculum, but this system would give the individual a chance to develop his potential in an optimal way.

For this system to work effectively for students who are interested in the behavioral sciences, it is essential that behavioral scientists be included among the preceptors. This is not always easy to achieve. In one school, a behavioral scientist said, the executive faculty, which consists of department chairmen, voted not to have anyone other than physicians as preceptors because it might "disturb the medical model."

Use of the track system leads to two important questions:

- Is there a core of behavioral science material that all medical students need to receive?
- If so, what is it?

Opinions differed on the answers to these two questions. Most participants seemed to agree that there is an essential core of basic facts and techniques that all physicians need to know. This has to do not only with the information components of specific disciplines but with the culture of medicine. Every student needs to learn physical diagnosis, history taking and medical interviewing.

A student is not going to be able to do a good general physical examination if he has never been shown how to examine an ear or a knee or taught what indicators he must look for in the examination. Similarly, he will not be able to make a perceptive behavioral science analysis of a patient's problems unless he has been taught what factors are important to a patient's well-being.

However, most of the participants also agreed that there is no one single core of behavioral science knowledge that should be required for all medical students at this time. There are numerous systems of knowledge from which the student should be able to select whatever relates to his particular interests. Which aspects of the behavioral sciences he finds relevant will depend upon the objectives he chooses. Criteria should be established for the minimum acceptable levels of behavioral science knowledge physicians should have, but not every physician should be expected to absorb the entire length and breadth of every subject.

The behavioral sciences are not a monolithic, undifferentiated block, nor is medicine. Students prepare for many careers—neurophysiology, behavioral genetics, psychiatry, community medicine, international health and countless other fields. For each of these specialties of professional practice different educational inputs are needed. In deciding what each student needs it is important to ask, "For what?" If a student is going to devote his career to the study of protein transplants, for example, he may have very little need of behavioral science knowledge beyond a general base. Medical schools should not feel they must be all things to all people. They should not be expected to provide a broad educational base that it is really the function of undergraduate colleges and universities to supply, but should be selective about the types of preparation they offer. There is nothing wrong with different medical schools having different curriculum specialties or with the same school offering a variety of curriculum choices.

At present, there is discontinuity both in the curriculum and in the selection procedures of the medical schools. The criteria for acceptance are much more closely related to the basic sciences than to clinical work, yet there is often zero correlation between a student's performance in the basic sciences and his skills in the clinical sciences. The first year of medical school is the period of greatest attrition. Because of the way the curriculum is structured, many students drop out before they get to the studies which relate to their particular interests and to the performance demands of practice.

Most participants appeared to favor making some contact with the behavioral sciences a curriculum requirement. Offering behavioral sciences solely on an elective basis has several hazards, they said. The behavioral sciences will be the weak link in the chain. The students will be under constant pressure to give priority to expanding and upgrading the level of their medical knowledge, and the behavioral sciences are likely to be left out of that process.

Making the behavioral sciences elective also involves risk that some departments will be told, "You haven't got a core; therefore go." Somehow, whenever a new curriculum is introduced it is eroded away within a matter of years by the old curriculum approaches. The economics of medical schools are partly responsible. As long as the budget is organized on the basis of this department getting this much and that department getting that much, little provision can be made for introducing new functions or curriculum changes.

The most important issue in relation to whether the behavioral sciences should be elective or required is that a smorgasbord method that gives students license to select whatever courses and projects they want could mean that some students would never get the basic conceptual and factual material they need. They may not know enough about human ecology to realize what they need to learn. Although students should be heavily involved in curriculum planning, it is not the principal job of the medical schools to tailor the curriculum to suit the students. Its job is to meet the needs of the patient and society. Medical school has to be more than four years of random experiencing. It needs to include a solid factual basis, planned experience, interaction, dialogue and continual follow-through so that one experience feeds back and builds onto the preceding ones.

The goals of meeting medical care needs and responding to student interest are not mutually exclusive, and it should be possible to work out an accommodation between them. In medical schools now using the individualized curriculum approach, some have tracks which center around subjects like psychophysiology, group dynamics, medical care systems, or poverty and disease. In others, the behavioral science components of the tracks are designed around both basic sciences and medical problems. In one school, some medical students sign up for more than one track.

This sort of flexibility makes sense. The curriculum should make it possible for each student to take what he needs when he needs it, so long as he is eventually exposed to all of the material essential to his chosen field.

The Experiential Approach

> Medical education should start with the problem and move in on it, which is the way real life works.
>
> You don't tell the students the system is all wrong; you provide the experiential base that will enable them to discover this for themselves and seek out what they need to know to bring about changes.

Many of the conference participants indicated that they felt there is a distinct trend in medical education toward direct learning, and that this is a valuable and important trend. It has been one of the misfortunes of medical education that medical students remain so isolated from the day-to-day practice of medicine in all its various settings. Under the traditional approach, students have virtually no contact with physicians who spend their entire working day in the practice of medicine. As a result, most physicians entering practice do not understand what goes into delivery of the kinds of medical care they will be providing.

Medical education centers mainly around delivery of care in hospitals to poor people who are flat on their backs in bed. Yet this setting, this population group, and the types of medical problems found in hospitalized patients do not represent the kinds of experience most physicians have in practice. Although physicians are fairly unanimous in endorsing the idea that the medical student should have at least six months of depth involvement with a practicing physician if he is to become a good physician, this approach is seldom used in medical education. Rotations are six weeks long, which gives students hardly any opportunity to get involved with a practicing physician at any level. Medical schools need to be concerned with the effects this educational deficiency will have on the kind of patient care these students will give when they enter practice. Opportunities to work over a period of several months with physicians who have 15 or 20 years of experience in ambulatory care could give students a much more realistic understanding of the kinds of problems physicians face.

Mr. Mark Greene, who was in his third year at Tufts Medical School at the time of the conference he attended, reported on his experience in several types of direct experience learning. When he entered medical school, Mr. Greene said, he was as naive as most students about the state of medical affairs today and how medical care is delivered. A first-year course in medical aociology turned on his interest in topics like the decision-making process and the kinds of political considerations that influence whether a new care facility will be built in the center of the city or on a rural campus.

In order to learn more about how preventive medicine is delivered, he spent his first summer working as a clerk in a preventive medicine department with a social anthropologist as his preceptor. At the same time, he began studying the health care delivery system represented by a multipractice specialty group. This he did as an outside observer. He did not work with the physicians or see patients, but simply studied the group as an institution.

Later he returned to the medical group in a different capacity, to study what spectrum of health facilities in the community the practicing physician needs to call into play in order to render comprehensive care to his patients. He visited various community agencies, followed their staffs through their day's work to see what it involved, talked with them about how they view physicians, how physicians utilize their services, and what unmet needs they see. He spent time with hospital administrators, the Visiting Nurse Association, family counseling services, the State hospital for the insane and the local board of health. Through these contacts, he was exposed to services he had hardly known existed. Many practicing physicians, he said, have no idea how such services operate or how to make referrals to them.

This student also spent several afternoons with pharmacists, finding out how prescriptions are processed and what sort of interaction takes place among the pharmacist, the physician and the patient. Then he discussed his impressions with a physician in order to get the physician's perspective as well as that of the pharmacist on such problems as kickbacks, the effects of writing frequent prescriptions on how widely sought the physician becomes, and the kinds of paperwork involved in third-party payment for medicines.

With the cooperation of the medical specialty group, this student also did a study of what happens in the transmission of information over the telephone between patient and nurse as they try to negotiate an encounter with a physician. This was not formally set up in terms of course structure; but, Mr. Greene said, he learned what he needed to know at the time he had use for the information. In relation to this research project, he had, for example, consulted an anthropologist, a sociologist and a biostatistician to find out what techniques are involved in obtaining an unbiased sampling of telephone calls. It is easy for a student to absorb this kind of information when he needs it and it is meaningful to him. It would not have made sense for him to study such methodologies as a first-year student.

In addition to his community contacts and research, Mr. Greene spent time with individual physicians in the multipractice specialty group. He discovered, he said, that medicine as it is actually practiced is very different from the picture of it he had gotten in medical school. The things he learned through this experience will play an important role in his final decision about what his career in medicine is going to be.

One of the best ways for students to learn about the social organization of medical settings and how the health care delivery systems works is for them to go through the system either as inpatients or outpatients, several participants suggested. Most students have some minor physical complaint, so they can be sent through the whole process from intake to discharge, preferably without the staff knowing they are there primarily as students. These role-taking opportunities help the students perceive how patients see the system. If they enter the hospital, for example, they will learn what it feels like to be so powerless that even bathroom privileges are doled out to them. Or they may discover that food trays are delivered by the lowest level emissaries in the hospital hierarchy who enter the patient's room as if it were foreign territory. These workers often appear to feel they are penetrating the domain of the nurses and doctors and must not step over the bounds of their assignment to open up communication with the patient. So they hastily drop the tray and withdraw, becoming in the process, hostile symbols of neglect and indifference in the patient's mind.

Many students receive much of their education in the outpatient clinic of the hospital, and the quality of training thus supplied often leaves much to be desired. The clinic has been the poor little orphan of the teaching hospital, a physician said. It has been the place where staff physicians and medical students were expected to roll up their sleeves, grit their teeth and dish out inferior, fractionated care to poor devils who had nowhere else to turn. And these poor devils were treated like third class citizens, coming in without appointment to wait for hours in totally depersonalized settings where they could get only superficial care with no back-up.

This does not have to be true. In some medical schools, the outpatient clinic is taking on an entirely new face. Patients are seen by appointment in a dignified way and receive a consistently high level of care. These improved clinics can be valuable laboratories for training medical students.

In the medical school setting, many participants said, the case presentation is one of the best ways to make the interrelationship of the many factors in health and disease explicit. If the student is responsible for talking with an unmarried pregnant girl who has come in with her second overdose of drugs, and is helped to see what resources the behavioral sciences can provide that may be useful to him in understanding and solving the patient's problems, he will get exposure to different categories of knowledge that he needs. He will see the relevance of many interrelated factors. He will then be able to draw upon this base of knowledge later in his medical career.

Clinical experience is more effective for everyone concerned if it is kept at the level of individual exchange with the patient. A case presentation in which 50-100 students fire questions at a patient accomplishes nothing but embarrassment of the patient. It does not give the student the kind of information or experience he needs.

If possible, case presentations should include not only the patient but his family. Students should not just be told about psychosocial deprivation, for example. They need to see and feel and experience at first hand what people in deprived families go through. There is a relationship between direct learning and affect in the learning. The attention level is high when affect is high, but sometimes in the medical schools the intense feeling that produces this affect is eliminated, thereby reducing the full effect of the learning process.

The case approach will bog down if either physicians or behavioral scientists who are asked to comment present material that is out of date. For example, if an anthropologist who is called upon to discuss ethnic counseling of, say, a Navajo Indian or a Mexican starts talking about studies of Navajos or Mexicans done 10 or 20 years ago, students will tune out. Things have changed. Neither the social nor the individual problems of minority groups are the same as they were a decade ago, and students know this.

Even assuming the material is up to date, we still come up against the problem of, "After the case presentation, what then?" Students need to move beyond this into larger phenomena, larger principles such as medical economics; but it is very difficult to get them to enroll in elective courses of this kind. Perhaps, some participants suggested, we should not try to get all medical students to move beyond the case approach. Perhaps we should settle for introducing all of them to some behavioral science concepts through the case approach and let the small percentage who are stimulated follow through on a more intensive basis.

6

Success in capturing student interest is most likely to be achieved in areas where a kernel of interest already exists. It is difficult to sustain in subjects such as medical economics unless these are translated into dramatic form by being related to the failures of the medical care system to provide solutions to the medical problems of the inner city. Basic behavioral science, the treatment of patients and teaching are not separate issues. Instead of separating behavioral science concepts out and presenting them through books and lectures, it may be better to insert them into work with students in the process of patient care.

A number of the student participants had worked during the summers in community health, community action, preventive medicine programs, and Student Health Organization projects. Such experience is an important supplement to the training they receive in the educational institutions, they said, because students often have difficulty finding out from their clinician teachers how health care services are rendered or should be rendered. The medical schools have gotten so interested in basic science research that they have abrogated their responsibilities in relation to the delivery of health care. The level of support the clinical faculties of the schools give to student participation in health care projects ranges from absolutely none to strong interest and active assistance, the students said.

The Student Health Organization projects include not only medical students but students in social work, law and other disciplines. The projects try to draw students from different schools all over the country rather than from a single medical school or university. Working with such problems as rousing the level of interest in health care or setting up dental health care programs in a migrant labor community offer a great deal of insight into the close relationship between behavior and the level of health of individuals and populations. Even though Student Health Organization projects usually deal with only one population group, they provide excellent preparation for most forms of medical practice. Many of the problems students encounter in a particular group are universal to the field of medicine.

If the basic principles of medicine and the behavioral sciences are to be taught in a meaningful way, they need to be demonstrated in relation to more than one model of medical care and more than one population group. Students need direct experience with inpatient care and ambulatory care, poverty level patients and middle and upper class patients; individuals and families and whole communities.

It is true that many clerkships and preceptorships in the past have proved unsuccessful, but this does not mean they will always fail. If the programs are properly operated and evaluated, the students will have vital learning experiences about new forms of health care service. One reason so many community health projects have gotten started is that a great many patients, individuals and communities feel that the big, complicated medical care system we have in this country has lost its sense of purpose; that it has forgotten that the central purpose of a medical care system should be to determine what it can do to support as well as restore the health of individual patients. Outstanding community programs can be used not only to provide students with direct experience in patient care and the organization of health services but to expand their conception of their own role and responsibilities as physicians.

Sometimes medical educators seem to assume that early experiences of this kind are failures if the students do not remain in socially oriented medical practice later on. This is not necessarily so. The student may go on to become a highly specialized neurosurgeon or orthopedist—but he may be a better specialist because of these early experiences. We oversimplify if we look for direct cause and effect relationships. We have to look at the mutations of early experience as the person develops and performs during a professional lifetime.

Some Curriculum Models

In order to explore which curriculum approaches best prepare medical students for actual practice, several participants discussed the ways the behavioral sciences are taught in their schools. None of the examples was offered as a prototype. They represented, rather, ideas, experiments, trials, and ways of organizing behavioral science teaching that have been found effective or ineffective. They included a newly developing program with a heavy cross-cultural emphasis; an approach which includes brief, intensive exploration of medical-social issues; two programs which stress direct experience with patients and medical care systems; a two-semester course in which lectures and case materials are used to present an overview of human ecology; a model in which a block of behavioral science material is organized around a concept of the expanding role of the physician; and a model in which the behavioral sciences are an integral component of the curriculum throughout the entire span of medical education.

An Evolutionary and Cross-Cultural Emphasis

Dr. Hazel H. Weidman, associate professor of social anthropology at the University of Miami, reported that a new program is being set up there in the hope of attracting more students into the field of behavioral medicine. This program will be open to both undergraduate and graduate students in medical anthropology, medicine, nursing, psychology and other areas of study. It will also emphasize a number of subspecialties within disciplines, such as psychiatric anthropology, pediatric anthropology, and community medicine. The program will, therefore, provide a broader focus than programs directed only toward preparation for a single discipline.

The program will center around four areas, all stressing a cross-cultural perspective. These will be child and human development, health care systems, clinical medicine and psychiatry. The program will be conducted by scholars in residence who have had field experience in the Caribbean, and will involve exchange programs arranged in cooperation with the Association of Caribbean Universities. This emphasis on cross-cultural field experience is expected to be a major selling point in interesting students in the program.

The concept looks at medicine in evolutionary and cross-cultural terms, linking particular facets of anthropology, sociology, psychology, biology and other disciplines to particular branches of medicine. Medical behavioral science is a field which is only beginning to develop, Dr. Weidman said. It is still too split up into individual disciplines. Social conditions today are such that students are demanding that medical education be restructured to reflect a synthesis of knowledge from the various disciplines.

Exploration of Medical-Social Issues

The reasons that medical schools introduce the behavioral sciences into the curriculum determine what the behavioral science emphasis will be, said Dr. Richard R. Willey, director of the Division of Social Perspectives of the University of Arizona College of Medicine. At Arizona, the principal emphasis is on strengthening and stabilizing the personal values of medical students and helping them understand how medicine as an institution functions in society. In the limited time available to expose medical students to the behavioral sciences, it may be more important to focus their attention on issues of this kind than on the established facts and methodologies of the social and behavioral sciences. It is increasing-

82

ly important for physicians to appreciate the interrelationships of medicine and society. Many of the problems with which today's physicians are most concerned involve value judgments. They need a rational base of knowledge from which to make such judgments.

The structure of the Division of Social Perspectives was based on four assumptions, Dr. Willey said. First, that the kind of social and behavioral science content that needed to be gotten across could not be taught effectively in a one-hour seminar sandwiched into a Friday afternoon or Saturday morning. It needed to be much more vitally interrelated with the rest of the curriculum and with the realities of society.

Second, that lectures would be a poor medium for getting across behavioral science ideas. Faculty members should function primarily in the role of discussants, contributing from the base of their own experience some possible answers to questions raised by the students about ways that the behavioral sciences relate to medical practice.

Third, that it is probably more effective to organize behavioral science materials around issues or problems than around conventional didactic course methods. A short course in medical sociology or medical anthropology would have less impact than a problem-solving approach to specific issues in the community.

Fourth, that the best way to make behavioral sciences meaningful to medical students is to expose them not just to medical and behavioral science faculty in the medical school but to ideas and people outside the medical school. As an experiment, several periods were set aside when all classes were suspended for one or two days so that students and interested faculty could spend their time exploring a particular medical-social issue outside the medical school setting. One particularly successful experiment involved bringing together medical students with an equivalent group of graduate students from another discipline. For example, a group of 30 medical students and 30 law students met to discuss such topics as abortion legislation. The students were astonished to discover that the discussions did not break down along the disciplinary lines of medicine and law but along philosophical lines, theological lines, lines of personal conviction and other dimensions.

The purpose of these discussions was not so much to impart specific behavioral science content information as to develop a productive level of inter-disciplinary discussion. Physicians are in constant interactive contact with members of other professions and disciplines. Brief but vigorous reality-based interdisciplinary discussion can do far more to make medical students receptive to the social and behavioral sciences than a traditional course in medical sociology could achieve over the span of a semester.

The Experiential Approach

Dr. DeWitt C. Baldwin, Jr., chairman of the Department of Behavioral Sciences and Community Health, University of Connecticut, and Dr. Hans O. Mauksch, professor of sociology at the University of Missouri School of Medicine, described efforts at their schools to give students early, direct experience with various types of health-related problems, with what physicians do, and with the ways that different types of health care systems function.

On the assumption that effective learning takes place only through involvement and commitment, behavioral sciences courses at the University of Connecticut include a minimum number of lectures and demonstrations and a heavy emphasis on independent study and projects, Dr. Baldwin said. Out of 68 hours devoted to three community projects in which each member of the first year class participates, only four are devoted to lectures and two to demonstration. Twenty-eight hours are devoted to discussion and 36 to independent and community work and study.

The philosophy which underlies this course structure is that a receptive environment for learning can best be created by using an experiential, process-oriented, problem-solving approach. Students become involved in community projects from the very beginning. Faculty does extensive preplanning and arranging of community contacts, which requires an enormous investment of energy and time. Different groups of students are then asked to go out into the community and explore three questions:

- What are the health needs of society?
- What are the health resources of society?
- What are the health attitudes and behaviors of society?

There is no expectation that the students will bring back any single "right" answer, but through their search, they learn a great deal at first hand about community health needs and how to plan and conduct community projects to meet these needs.

The students' explorations are followed up by discussions with invited experts from the community. For example, for discussion of the economics of health care, the panel of discussants included members of the Teamsters Union, Blue Cross, the State Dental Society and a health economist.

The advantage of this approach of sending the students directly into the community is that they quickly discover what behavioral science methods and skills they need to master and are

84

therefore particularly receptive when they study them. For example, students doing an epidemiological survey of dental health needs learn to do oral examinations, make diagnoses, fill out scoring sheets, feed social and epidemiological data into a computer for analysis, and compare the findings with the results of other research. Communications skills are developed through process-oriented contacts with patients of various social and intellectual backgrounds. The amount of help and consultation given by members of the faculty in each project varies with the needs, skills and responses of different students.

The principal emphasis in these courses is not on building technical competence in dentistry; the student receives that aspect of training in his other courses. The purpose of these courses is specifically to build awareness and provide perspectives on the health system and the student's own reasons for choosing his profession. Receptivity to content knowledge grows logically out of this, because the students can see why particular content is important.

At Missouri, Dr. Mauksch said, a two-semester project-oriented course covers human development and the family. Its objective is to make the students aware that each time they give a medical order, as physicians, they will be intervening in the total family process of value judgments and relationships. It is not only a question of what they will *do* as physicians, but who and what they will *be* in relation to the lives of the patients and their families.

During the first semester, students go into various areas of the city to interview the residents. Usually they are well-received; but not always—there have been incidents such as one student being chased away with a gun and another being accused of stealing the homeowner's cat.

During the second semester, small groups of students select two projects from a list of 50. The projects range through such foci as emergency room procedures, quality control in medical care, and dealing with death and grief. These projects bring the students into contact with the entire senior faculty and the general clinical faculty. One result has been a substantial increase in the level of faculty interest in the human ecology and behavioral science courses.

One of the principal handicaps the course faces, Dr. Mauksch said, is the lack of time to make full use of the serendipitous learning opportunities the students uncover. It is very important for the students to have time to bring back and "process" what they have

85

learned. There is never enough time to explore all the possibilities that have opened up, but it is done as much as time permits. For example, two groups of students did projects in the emergency rooms of two different hospitals. When they compared their experiences, they found many similarities, but they also found a major variable in the two settings which affected the ways the emergency rooms functioned. The police are the main purveyors of emergency cases, and the students found that the attitudes of the police departments in whose jurisdictions the two hospitals lay were entirely different. Consequently, the students went back to study the police departments in greater detail.

In another part of their experience at Missouri, first year students are attached to an attending physician, a resident, or an intern for an hour and a half to go with him wherever he goes and observe whatever he does. Since this is randomized, students sometimes end up rather unhappy because their mentors happen to spend their time in their offices pushing papers or reading books; but most have useful and interesting experiences. When all of the students get together, they are able to piece together some perception of time distribution in medical care. They can see that about 50 percent of the physician's time goes into patient care, some into teaching, and about 15 percent into ritualistic activities of various levels of importance.

During the second semester, students divide into seminar groups of 10 to 15 with a faculty member to examine health care problems in which they have particular interest. They prepare for this by reading and discussions with resource people. Further discussion and integration of what they have learned follows site visits. Last year one group of students concentrated on the inner city. Another group who had expressed interest in the problems of rural health spent a weekend in the country with a faculty member. They discovered something about the heroic performance of country doctors. In one town they discovered an 86 year old woman physician who spent her time taking care of all the patients other physicians more influential in the power structure didn't want to take care of. In some towns, the students discovered that physicians successfully keep pharmacists out in order to be able to sell drugs themselves. Another group of students, also under faculty guidance, looked at the medical care system from the point of view of environmental health.

It does not work to send out students—whether they are medical, sociology or anthropology students—into an experience of this kind on their own. Without faculty guidance and interpretation, they come back with their own prejudices reinforced or new ones instilled.

After these field experiences, some of the students filed evaluative reports, Dr. Mauksch said. One described his experiences as part of the inner city seminar group. He saw at first hand, he said, what it means to have one night nurse in a general hospital in charge of 40 surgical patients, all of whom have to shout for attention because there are no buzzers. The student "rapped" with the local Black Panther group to find out its approach to inner city health care, which included such efforts as outfitting a small van with a respirator to treat acute respiratory distress. This, the student said, was a service sorely needed in the community.

He and his group learned about problems of community involvement and acceptance, and about the problems of financing care, the student said. They discovered the need to be aware of different life styles.

In September, this student said, he had walked into his human ecology class totally "enlightened." He had talked with upper classmen, and the consensus seemed to be that the course was a waste of time. As the semester progressed, he found the ecology course "usurping" more and more of his time. By the second semester he was fully committed to the idea that social awareness is an essential part of being a physician. It is time to get away from a concept of medicine in which the physician greets an illness that happens to bring a person along with it. We need to focus on the concept that the physician greets a person who happens to have an illness. It is time to change from the concept that the physician treats illness to the concept that he treats people from a variety of environments and life styles who happen to be ill.

It is time, the student continued, for us to start spending as much time learning how to prevent disease as we spend learning how to treat it. This involves learning the effects of environment, community and family on the patient. The professor of medicine may teach the student medical skills, but it is the behavioral scientists who teach him how to make use of these skills. The student may walk out a clinical genius, but if he does so at the expense of remaining a sociological moron, he will end up, at best, as an average physician.

Concluding his report to the class, the student said he might be accused of having been coopted by the sociologists. This, he said, he freely admitted—but if he had been coopted into being a better physician, that is not a bad outcome.

The Ecological Overview

Dr. Donald L. Brummer, Associate Professor of Medicine at the Medical College of Virginia, is an internist with special interest in infectious diseases. In developing a two semester course in human ecology for first year students, Dr. Brummer said, he had several objectives in mind:

- to increase student awareness of the biological, psychological and sociological aspects of health and disease
- to stress the interdependence of these three areas with the environment
- to give students a notion of beliefs, attitudes and values in the human response to illness
- to help students understand the processes of communication and the relationships that are basic to the interaction of health personnel with patients and with each other
- to help students recognize how these processes of communication can be used in the medical setting and the doctor-patient relationship.

At MCV, members of the Health Sciences Division teach students from the medical, dental and nursing schools, the school of pharmacy and other departments of the university. Courses centered around behavioral science subject areas are taught by representatives of various disciplines. Since there is no division or department of behavioral science, and there are only eight behavioral scientists in a faculty of 450, experts in various subject areas like ethology are invited from other schools to address the students. Physicians also participate in the presentations.

Initially, the human ecology course met only once a week, which somewhat diffused its effect. At the time of the conference, the possibility of compressing the course into two intensive, four-week blocks of instruction was being explored.

In this course, a patient—preferably one with a complicated history—is presented to the students on Day One. Students are used to the idea that biochemists, physiologists and anatomists always have answers. They need to realize that some patients have problems to which there are no answers.

On Day Two, some of the conceptual bases of health and disease are explored. The possible effects of time, cross-cultural differences, and other factors are studied.

In the next part of the course, 20 hours are devoted to tracing growth and development through adolescence. Films and closed circuit television tapes of children at various ages and stages of development are discussed by psychologists and pediatricians. Originally this segment of the course covered the entire life span, but lack of faculty who could handle the post-adolescent periods effectively made it necessary to eliminate that part of the course.

A four-hour session on the brain and behavior follows, with the presentation kept in terms of the real world in which the student will be working.

Next comes a three-and-a-half to four-hour session on the ethological background of behavior.

This is followed by 24 class hours of discussion of normal behavior in the adult mood, affect, thought organization, basic emotional reactions, control of impulses, and determinants of personality. This material is often presented by showing the contrast between normal and abnormal behavior through the use of tapes of psychiatric interviews in which patients show abnormal behavior. In response to student requests, a sixteen-hour section on normal human sexual behavior was added to the course.

The next unit covers the family as a social group. This is usually presented by a psychiatrist. Nathan Ackerman's films are used.

Next, a sociologist talks about social organization, role playing, the development of ethical concepts in societies and how these vary from group to group, and communication within and between social groups. This is followed by four hours on theories of learning and communication.

Twelve hours on medical interviewing come next, with six or eight demonstrations presented live or on tape. Each student is then given the name of a patient and sent to talk with him and write up a social history. He is told to identify himself clearly as a student so that there will be no implication that he has any medical responsibility for the patient. The point is simply to give students experience in talking with patients. This disturbs them so much that it proved to be necessary to prepare them by telling them, first, that the patient is not going to die, and second, that they will not be treating him. Even so, the students dredge up all kinds of anxieties and problems of their own when they get to this assignment. Ideally, each student should also be assigned to a patient whom he would visit in the chronic disease facility over a period of several months. He should visit the home, talk with the family, the patient's physician, his employer, and public health or other professional people involved in the case. However, this goal had not been achieved at the time of the conference; and Dr. Brummer indicated that the lack of this experience was the principal weak point of the course.

The next part of the course is a panel on doctor-doctor relationships. The panel includes general practitioners, an internist, a surgeon, a psychiatrist, a public health physician and a social worker. They spend the first half hour being polite to each other, Dr. Brummer said; then they let loose and start talking about problems like referrals and fee splitting and the lousy job other doctors do. This really gets the students wound up; they realize that this is what they will be up against in four years.

Next, another patient is presented—a chronic patient, usually from the rehabilitation service. The point is to show how doctor-doctor relationships and referrals have helped or hurt this patient, and how a team approach is often needed that includes a vocational advisor, a public health physician, other physicians, nurses, social workers and others.

The course concludes with two four-hour sessions on medical ethics, the first presented by physicians and the second by clergymen.

Grading is on a pass-fail basis, as the only base for the grade is the case history the student turns in and the term paper he does on something that has been discussed during the year.

Throughout the course, emphasis is on free discussion involving not only the faculty and panelists but the students. This usually works well even though the class has an enrollment of about 135. Because the class is held on Saturday morning, attendance runs about 75 percent; and those who come are the ones who are genuinely interested and eager to enter into discussion. For a course of this kind to keep its focus, some individual must carry continuing responsibility for attending every session, relating the sessions to each other, and keeping the discussion on track.

Some contact between the students and the faculty members who teach this course continues in the subsequent years of medical education; for example, during clinical rotations, internships and residencies. Thus, some opportunity exists to follow up on the concepts presented during the first year course, and the students and faculty who have been genuinely excited about it tend to seek each other out. This course does not serve as a substitute for a department of behavioral sciences, Dr. Brummer said; nor does it enable students to learn any one area in depth. They will not really learn the techniques of medical interviewing until they go on the ward in their third year and need to know how to use this skill. Nor will they really understand growtn and development until they get into their pediatric training and start working with children. But what the students do get from the course is a sense of the kinds of things physicians do and the kinds of things they need to know. Perhaps most of all, the students begin to build some attitudes toward the practice of medicine which will influence the directions they take in the future.

Expansion of the Clinical Model

At Mount Sinai School of Medicine, said Dr. Samuel W. Bloom, Professor of Sociology in Community Medicine, emphasis on the behavioral sciences has been increased at the request of the students. The behavioral sciences were included in the original conception of the school, but they were not included in the curriculum as formulated when the school opened. For this reason, the material is offered as a 30 hour block at the end of the second year, which is not the best time for it. It should be offered the first year, or, if it must be in the second year, it should be given at the beginning rather than the end of the year.

In general, the medical curriculum is organized on the Western Reserve plan. Courses during the first two years center on organ systems and are taught by committees. An introduction to medicine course runs through the entire first two years. It begins with the traditional presentation of clinical materials to give the student some sense of what medicine is all about. It also covers physical diagnosis and history-making. A considerable amount of time is reserved for electives during the first two years. The one-year clinical component of the curriculum combines inpatient and outpatient experience.

The behavioral science course was developed by a curriculum committee headed by Dr. Bloom. The committee includes both basic and behavioral scientists: MDs with backgrounds in neuroscience, biochemistry, surgery, public health and community medicine; a pharmacist, psychiatrists, a clinical psychologist, social workers, a specialist in medical education, sociologists and several medical students. The course is taught on an integrated basis by members of several disciplines.

A concept of the expanding role of the physician was chosen as the basis around which the course is organized. The committee identified several components which have contributed to this expanding role:

- the human individual in relationship with the internal organic environment

  The theme is the doctor-patient dyad; the goal, containing disease.

- the human individual in relationship to significant others, including the family

  The theme is the doctor's role in relation to disease as influenced by psychological and social components. Although the family is recognized as an important secondary influence, the primary focus is on disease as the main causal agent.
- the human individual in relation to institutionally organized significant others

  The themes which emerge in connection with this component are the host theory of disease, milieu therapy in psychiatry, the life island, intensive care in surgery, comprehensive care in internal medicine. Within this framework we begin to see a truly integrated concept of relationships. We see the doctor not alone but as a member of a team, and the patient not just as a vessel of disease but as the host of disease.
- the human individual in relationship with categorically identified populations such as socio-economic strata and cultural origins

  The themes here are social ecology, prevention, and populations at risk; and the skill associated with them is epidemiology.
- the human individual as a member of plural institutions organized as a community, such as neighborhoods and ghettos

  The themes are the community and the "organic whole" concept of professional-client relationships. This component differs from the previous one in its emphasis on optimizing social functioning, as opposed to defining medical tasks in terms of categories such as population at risk.

The committee felt, Dr. Bloom said, that it would be doing a rather special job of teaching the behavioral sciences if it could help students conceive of the physician's role as a changing, developing reality responsive to both the growth of knowledge and the expansions and changes that occur in the community the physician serves. The committee did not consider its role as being to teach the facts or concepts of behavioral science, but rather to teach the sensitizing frames of reference and conceptual modes that would have continuing significance to students as they went out into practice.

Since the behavioral science material was to be presented at the end of the second year, effort was made to avoid repetition of social and psychological material presented in previous courses. For example, a session on sexuality was scheduled as part of the unit on the human individual in relation to the internal organic milieu. A student member of the committee listed all the information about sex that had been taught earlier in the curriculum. The list was a page and a half long. It included the physiology of orgasm, complete study of the structural and physiological apparatuses of the body, etc. Nevertheless, there had been no effective discussion of sexual problems of the kinds that might come into a doctor's office. There had, for example, been no discussion of masturbation or perversion. The committee decided to include discussion of these problems, relating the behavioral aspects to the organic material the students had received earlier.

At the beginning of the course, each student is asked to prepare a brief written paper which is a descriptive analysis of one patient's family. Although it is suggested that the student use as his subject the patient assigned to him earlier for comprehensive work-up in his introduction to medicine course, he may, if he prefers, use any patient with whom he has had contact. At the end of the behavioral science course, the student is asked to do the same assignment again, using the same patient family. The objective is to see what effect the course has on the way the student perceives the patient and his problems. The student is not graded on the basis of the content of his analysis; all he has to do to pass the course is to turn in his paper. However, the papers are read by the committee and discussed in detail in individual sessions with the students the following fall. This not only relieves the students of time pressure while studying for the National Board examinations but also establishes continuing contact between the students and the behavioral science faculty.

To illustrate what diverse challenges the students present for the teacher, Dr. Bloom quoted from papers submitted at the beginning of the course by two students. The first outlined a complex medical and family history and concluded with the statement, "As is the case for most—but not all—individuals admitted to this hospital for non-psychiatric reasons, I see no medical significance in this patient's social history."

The second paper included a much more complete history of the patient and such comments as: "I am still in process of working up this patient for future presentation. In future interviews I hope to fill in some of the gaps and answer some of the questions I raise below." The student pointed out that certain family events in the patient's life were not causally related to her illness but did lead to neglect in her care which had serious consequences. He went on to comment on the patient's relationship with her children and listed several specific questions he felt needed to be explored which "should prove to be a fertile area and one in which external intervention must be contemplated."

Case reports by the students may prove to be a valuable resource as teaching materials for subsequent classes. These materials lend themselves well to analysis in a behavioral science framework and could be useful when used in conjunction with contacts of other students with patients.

The strategy of teaching in the course is based on the assumption that the most important part of the job is to try to develop the sensitivity of the students and get them involved with the behavioral sciences in a way that will carry over into their fourth year clerkships in community medicine. These clerkships, which run full time for six weeks, are project-oriented. Each student develops a study of some aspect of community or individual practice. There is a strong social and behavioral science input from the faculty on these assignments.

To prepare the students for the clerkships, the committee felt the emphasis should not be on teaching them how to do psychological tests or complex organizational analyses. Rather, the goal would be to show them samples of what happens in a number of strategically conceived areas. For example, they would see how a hospital analysis is done, what the significant relationships within a hospital are, and how the behavioral and organic components interrelate.

There were only two lectures during the behavioral science course. One of these relied heavily on excellent comparative film studies of primates which illustrated the theme of the session, mother-infant relationships. The other sessions were primarily free discussions centering around particular themes or activities. For example, a patient was interviewed by a physician, a psychologist, and a student. The interview was taped. Later, the tape was presented in class for discussion.

In preparation for another discussion, the students were asked to read the Moynihan report. This had several purposes. The report served as an example of a popular methodology in the study of the black family, and the discussion was in part a critique of the methodology. Additional objectives were to engage the students in thinking about "blackness" and about "familiness."

This type of discussion is a very demanding form of teaching, Dr. Bloom said. It requires the teacher to be patient with silence and not jump in whenever things seem to slow down. If the topic is a good one and intrinsically involving, the students eventually respond. The situation can also get to the point where everyone is shouting at everyone else, but sometimes this leads to a very productive exchange.

Because the library at Sinai is often able to supply, at best, only four or five copies of any given material, the committee created its own syllabus of readings. These range from articles on science to the Moynihan report to an unpublished manuscript on values in American culture. Most of the students do read these materials and bring them up in discussion, if they do not have to fight to get a copy at some inconvenient hour in the library. With 38 students in the class, which meets four days a week, it is impossible for them to keep up with the necessary reading unless they have it at hand where they can read it in their own rooms and at their own convenience. Similar syllabus materials are provided in other courses given by other departments also. A selective bibliography is prepared to supplement the syllabus materials.

The course has some evaluation techniques built into it, Dr. Bloom said. A brief, precoded evaluation sheet is given out after every session. The descriptive case reports the students do at the beginning and end of the course are also a form of evaluation, because they show the amount and kind of change that takes place in the student's thinking.

A verbal evaluative feedback mechanism is also used throughout the course. Class representatives are elected by the students, and an effort is made to include students known to have different points of view. The teaching committee meets with these representatives to get their reactions and those of their classmates, and they offer some very tough criticisms.

It is always difficult to say with certainty whether or not something "works," Dr. Bloom said. It depends upon what your goals and your criteria are, and whether the evaluative mechanisms you use provide a meaningful barometer. The real test wil come in what the students have to say about the course in later years in their continuing contacts with the behavioral science faculty, and what part of what they have learned they ultimately apply in their work.

Offering Behavioral Science Input Throughout Medical Education

The curriculum of the Pennsylvania State University College of Medicine at Hershey has been developed on the premise that the behavioral sciences should be an integral part of all stages of medical education, said Dr. Evan G. Pattishall, Chairman of the Department of Behavioral Science. Dr. Pattishall is identified with an interdisciplinary approach, since he is both a physician and a psychologist.

When he agreed to head the Department of Behavioral Science at Hershey, Dr. Pattishall said, he made several demands:

- that his department have a large enough "critical mass" to have an impact on both the basic and the clinical sciences
- that the behavioral science faculty have rounding privileges
- that one fourth of the behavioral science faculty be clinical people, including physicians, clinical psychologists and members of other clinical disciplines
- that personal and curriculum contact be maintained with the students throughout the four years of medical school.

The result is an educational system in the department in which clinicians and behavioral scientists are continually talking and working together. They share teaching experiences, they share research, and they share departmental seminars.

At Hershey, the Department of Behavioral Science presents more patients to students during their first year than any other department. During the four years of medical education about 46 hours of core behavioral science material is presented, plus electives and correlated conferences.

During the first year, the medical student receives a core course in behavioral growth and development plus an elective course in which he explores in depth any one of several tracks he chooses to follow. The three tracks offered initially were learning, brain behavior, and health care and delivery; and an additional track in psychosomatic medicine was planned. Elective courses relating to these tracks are offered during the third quarter, and each year about half of the class chooses to take one of the electives.

In the second year the emphasis is on something called—for lack of a better name—behavioral medicine. Efforts are made to integrate this work closely with the departments of pathology and pharmacology. For example, when chemical and physical agents are discussed as factors in pathology, the behavioral components of drug addiction and alcoholism are also presented. When respiratory pathology is discussed, such social, cultural and behavioral factors as smoking are presented, both in terms of what behavioral phenomena contribute to the development of pathology and in terms of what behavioral signs and symptoms appear once the pathological respiratory lesion has developed. There may, for example, be a reduction of activity, a "guarding" behavior. The differences in behavior of persons with different types of respiratory distress are also emphasized. For example, an asthmatic breathes differently and therefore acts differently than a person with emphysema. Sometimes material of this kind is offered in an integrated fashion with an internist, a pathologist and a behavioral scientist presenting it jointly; but it is more often presented individually by each.

At the time of the conferences, the third year at Hershey was a pilot program. It was completely filled with clinical rounds, conferences and tutorials and included no time for electives. From a behavioral science standpoint, the purpose of this year was to bridge and translate, giving the student opportunity to apply in patient care situations the behavioral science concepts, information, knowledge and skills he had learned during the first two years. Members of the behavioral science faculty worked closely with the students during this year. This posed some mechanical problems during the school's early years, since there was no teaching hospital in Hershey. Harrisburg Hospital was used for teaching, so members of the behavioral science faculty had to commute between Hershey and Harrisburg to participate in this clinical training.

Hershey did not yet have a fourth year class at the time of the conferences, but curriculum planning called for the fourth year to be devoted entirely to electives. It was anticipated that behavioral science faculty would participate in conferences and rounds relating to the specialties elected by the students. As Hershey expands to include internships, residencies and post graduate education, there will also be behavioral science input at these levels.

Shaping behavior is an example of a concept that is introduced early in medical education and carries through the later years. The student learns about shaping behavior during his first year core courses and perhaps in the electives in his track. He learns that reinforcing certain specific behaviors induces the individual to repeat them. This learning concept is called shaping because it is done gradually. Perfect performance each time is not demanded; the individual is reinforced for whatever part of the desired behavior he exhibits. With each new response, the reinforcement is narrowed down to more and more specific behavior.

In the second year, when the emphasis is on behavioral medicine, shaping is examined in terms of the kind of physiological conditioning that occurs, such as heart rate and blood pressure responses.

During the clinical years, the student may encounter shaping behavior in the relationships between a patient and his parents, or between the patient and the hospital staff. For example, a child whose customary method of controlling his parents and shaping their behavior is to threaten to kill himself may try this same tactic in the hospital ward in an attempt to manipulate the physicians, nurses and students. Psychiatric consultation and intervention would usually be sought in such a case, but the behavioral science faculty may also have an important contribution to make in helping the students see where this kind of behavior fits into the overall problem of the child and his family.

In his opinion, Dr. Pattishall said, the ideal behavioral science program should encompass a progressive development and translation of the basic concepts of human behavior into terms of what the student needs to learn about patient care. The best laboratory for testing out exactly what the behavioral sciences can and do contribute is probably the pediatric clinic, where cases can be examined step by step to document exactly what behavioral science information a medical student would need in order to solve the patient's medical or personal problems. This is one way of identifying the core information that needs to be presented during the preclinical years and what additional types of material should be included at each stage of medical education.

Teaching Behavioral Sciences in Medical Education: Evaluation and Training

Even though behavioral scientists are known for the sophisticated level of their methodology in measuring many aspects of human behavior, they have not yet come up with really good methods for evaluating the effectiveness of their own teaching methods. What evaluation techniques have been developed relate far more to how well students like the courses than to how well the courses fulfill their objectives. This can be very misleading. Students respond to all sorts of gimmicks. They may think a course is terrific if it is taught by a professor with a great sense of showmanship, even if he presents very little content. The way students feel about their instructor is an important variable; people learn more easily from professors they like. But this reaction is not a true measure of the effectiveness of the course because it does not necessarily reflect success in communicating solid content.

In evaluating behavioral science courses, the students said, the basic criteria should be content and presentation. The committee method of evaluation, with equal student-faculty representation for each subject area, is a good means. A questionnaire to be filled out by each student at the end of the course would also be useful. These methods would require responsiveness on the part of the people in power.

The way students write up cases could be one useful part of the evaluation of behavioral science courses if the assessment is done scientifically and if write-ups by the same students are followed throughout the clinical years of their training. This would show the extent to which students are able to transfer the skills taught in the behavioral science courses over into actual patient care. This should include assessment of the data base they use, their analysis of the data, and the extent to which they make use of community resources to follow up on the problems they have enumerated.

It must, however, be remembered that student write-ups are influenced by many factors. For example, one school had a student who had shown amazing promise, sensitivity and awareness in relation to the social and cultural aspects of health and disease, and her professors felt rather proud of themselves for getting the message across to her so well.

She went on into her study of surgery. One of her former professors happened to come across a write-up she had done which completely ignored the social and psychological aspects of the problem. The professor was terribly hurt; he had obviously failed. His courses were no good. The girl had just been putting him on. So he went to her and said "How come you were so good with us, but you haven't said a word about it here?"

"Listen," she said, "do you think I want to get my block knocked off? These surgeons don't want to hear about social and psychological history."

What this means, of course, is that in evaluating behavioral science teaching efforts, we have to deal with the real world of students interacting with faculty. We have to recognize conflicting pressures on them that make them emphasize certain things at certain times. The real test of the success of behavioral science teaching is what these students are like later on, after five or ten years in practice; how much use they are making of the behavioral science concepts they learned as first year medical students; and how their performance compares with the performance of other physicians who were not exposed to behavioral science courses during their medical education. The most valid method of assessing an educational program or a particular curriculum input has to do with the impact it has on the quality of patient care.

Where a merit system for evaluation of faculty does not exist, one should be instituted, the students said. Professors should be under sanction to respond constructively to evaluation. Where particular inadequacies are noted, such as being a poor lecturer or

99

a poor organizer of content, alternative modes of teaching should be suggested to the professor by those with decision-making powers.

It is possible, some participants said, that formal evaluation of behavioral science courses in medical schools would be premature at this point. Because of their interest in scientific methodology, behavioral scientists may leap too quickly into evaluation of their own courses as if it were some terribly valuable activity.

One of the major problems that makes evaluation of behavioral science courses difficult is that they do not, for the most part, attempt to teach facts. They teach concepts. It is relatively easy to measure how well facts are absorbed, but the only valid test of how concepts are absorbed is how well students are able to synthesize and integrate the concepts and apply them in what they do over a long period of time.

What needs to be done now is to accumulate a documented social history of current teaching experiences so that accurate evaluation can take place at the appropriate time. We all recognize that it is impossible to evaluate historical events until sufficient time has passed for political and emotional influences to cool off and a body of documented evidence to be assembled. Why, then, should we assume it is possible to do instant evaluations of new teaching approaches?

The question of evaluation is closely keyed in with the crucial need to develop a cadre of medical educators specifically trained to teach behavioral sciences in the medical schools, because the quality of teaching is one of the biggest problems of medical education today. Much of the student revolt of our time is not a revolt against the Establishment or the administration of the university, the participants said; it is a revolt against poor teaching. People are not born good teachers, but we often act as if we think we are. If a man is a good surgeon or behavioral scientist, the medical school—and he, himself—assume that this qualifies him to teach surgery or behavioral science. It does not. Most clinicians and behavioral scientists know far too little about the nature of an effective learning situation to be able to create one for their students.

Much more attention needs to be given to developing a curriculum for professors; not a Mickey Mouse bag of tricks, but a curriculum that approaches teaching as the serious moral obligation it is. In medical school we have, on one hand, the pursuit of truth by basic scientists. On the other hand, we have the concern of clinicians for the problems of patients. In the center, as the linkers and communicators, are the members of the teaching faculty. Their function is to say, of these basic truths, what parts apply to the patient.

Behavioral science faculty members are often poorly chosen on a hit-or-miss basis because no criteria for selection have been established. In choosing behavioral scientists to work in medical schools, it is important to remember that they are not all one breed. Some have made formal commitments to medical education or medical research. Others are peripatetic, moving in and out of tangential relationships to the medical field without formal commitments. They might, for example, be interested in a particular area of medical-behavioral research, such as coronary thrombosis or high blood pressure, but not be interested in the medical behavioral field as a whole. Still other behavioral scientists are not involved in medical questions at all and would have little to offer medical students. How effective behavioral scientists are in medical education depends on the thrust of their individual interests as well as their general level of competence as behavioral scientists.

Behavioral scientists who come to teach in the medical schools must develop keen skills in singling out what concepts and information from their individual disciplines are important for medical students to learn and how these can be related closely to the basic scientific and clinical aspects of medical education. Behavioral science teaching is often too theoretical. Behavioral scientists are trained to study, to analyze, to publish. If they are to be effective teachers of medical students, their own training needs to be more functional. It might be helpful for behavioral scientists to receive part of their training on the relationship between biology and behavioral science in the medical school. This would not only give them broader preparation but greater familiarity with the medical school setting. The medical schools need to take more responsibility for bringing about this kind of training.

Evaluating Student Competence

Formal evaluation of medical student competence draws heavily on the results of the National Board examinations. Most of the participants in the four conferences indicated that this is a poor means of assessment. It is a sort of *rite de passage*, they said. Any student who can get through his examination reasonably well graduates from medical school, but the Boards do not provide an adequate criterion for measuring qualifications to practice medicine. For example, the examinations contain detailed questions about psychiatric theory and epidemiology. But what a student learns during his psychiatric rotation is not psychiatric theory;

he learns what it is like to work with patients who are mentally ill. Whether the student learns about epidemiology or not depends on whether he has professors who happen to be interested in epidemiology; but he is tested on it as if it were part of a fixed core curriculum.

It is important to emphasize that students do not object to evaluation. They do, however, feel that a series of multiple choice questions is an inappropriate way to determine the ability of someone to practice medicine. This format can be mastered only by ransacking the literature of many disciplines. All of the participants agreed that it will be difficult to gain acceptance for new methods of testing, since the multiple choice section of the examination is under the control of the basic sciences which are accustomed to relying heavily on this format. The multiple choice approach presumes an immutable base of common knowledge. This does not exist even in the basic sciences. A recent study of the biochemical section of Part I of the Boards showed that less than 20 percent of the questions were answered correctly by 75 percent or more of the students. Some of the questions included are so difficult that even members of the Test Committee were unable to give correct answers to questions in their own fields of specialization.

This method of evaluation distorts the focus of medical education. As the situation now stands, the requirements of the National Boards force medical schools to teach a core whether they wish to or not and, to some extent, dictate the content of the core. This creates a cart-before-the-horse situation, where the student and the medical school must shape the curriculum around the questions he must master to be able to pass the Boards. This should not be the controlling factor.

One examination made up to cover every field and used throughout the country is inadequate because it does not fit individual circumstances. If the curriculum in the medical school is going to be made more flexible, evaluation procedures will also have to be made applicable to individuals. To avoid victimizing students or requiring behavioral scientists to shape their teaching around the National Boards, a system of alternative questions could be developed so that students could choose the behavioral sciences areas of the test which cover materials included in the curricula of their particular schools. Perhaps a series of subsections on medical anthropology, sociology and other subjects could be developed.

As the medical system is now devised, the student has to go through a whole series of hurdles. First there is the highly standardized MCAT test, which heavily influences whether or not he is accepted into medical school. Then in medical school he has to go through a curriculum which is determined to a large extent without reference either to his interests or to the requirements of patient care. The curriculum reflects the power structure of the school; the faculty members who have the most power get the most hours in the curriculum.

Next, the student must take the National Board examinations. This physician-generated system of evaluation is required by more schools than it was 10 years ago. Then the student has to go through an approval ceremony. His school has to give approval, and his hospital has to give approval. Then he has to go into a certified internship program.

Next there are the State Boards to be conquered, and the student discovers that the professional requirements of his school are not always in harmony with State licensure requirements. The power to grant medical licenses rests with the States rather than with any national body, so they are in some ways an even more important consideration than the National Boards.

Is this much social control necessary to produce good physicians? Obviously, there should be standards for performance, but there are many pathways that could lead to the same end. Students should be allowed to take different roads as long as their progress is compatible with the ultimate goal.

This issue keyed in closely with important developments that occurred during the two-year span covered by the four conferences. The question of whether the National Boards should include a section on the behavioral sciences has been discussed by many groups over the past several years. This represents a major change in thinking, since the Boards have covered the same six disciplines since 1914. It is widely recognized that the physician needs a grasp of behavioral science concepts just as he needs a background in other basic sciences; so from this point of view it makes sense for a behavioral science section to be included.

Although not all of the participants in the four conferences agreed, most felt that this is a logical and necessary step. As one of them put it, the National Boards need to be outgrown, but they are probably going to have to be redesigned by the behavioral sciences getting into them and helping to change them. This would, they said, be a powerful strategy for bringing about change. The issue is much broader than just the National Boards. The whole future of medical education and of the medical care system is involved. Social change will not come about by simple declaration of intent, by fiat or by any one mechanism. There must be multiple points of entry into effecting broad-scale institutional change and reform. The National Boards have a profound goal-orienting effect on student behavior, and they relate in important ways to licensing laws. The total structure of the examination needs to be redesigned, but this cannot be done overnight.

The next few years are particularly crucial ones for the behavioral sciences. Not all medical schools teach the behavioral sciences, yet all students take the same tests. Good students from excellent schools may come out with very low scores because they are tested on something they have had no opportunity to learn. Both students and faculty of the medical schools will be more insistent about the inclusion of behavioral sciences in the curriculum if the students are to be tested on them in their National Boards.

Two participants expressed the point of view that if students are expected to be familiar with a particular area, they will study it on their own. As soon as students start flunking the behavioral science part of the Boards, they said, curriculum changes will be made.

Most of the participants objected strongly to this concept which they felt was grossly unfair to the students. As one of them put it:

> It is very important that you not sacrifice students for the sake of social change. I don't want to see students fail the National Boards so that you get your piece of pie.

During the second conference, in October 1969, one of the interdisciplinary workgroups recommended that a representative group of behavioral scientists develop appropriate questions for inclusion on the examination. During that same month, the National Board of Medical Examiners created a six-member Behavioral Sciences Test Committee to develop questions for Part I of the National Board Examination. Dr. Evan Pattishall was appointed chairman, and several other members of the conference group were members of the committee.

By the time of the fourth conference in November 1970, this committee had developed nearly 370 items concerning behavioral science areas they felt should be covered in the National Boards. The committee was scheduled to meet again in December 1970 to consider additional questions its members had developed since its last meeting.

During this effort, the committee found that framing valid and meaningful questions within the multiple choice format was a very difficult task. It was necessary to identify behavioral science concepts which are relevant for future doctors, which can be substantiated, and which represent something beyond everyday knowledge and common wisdom. The committee was bound further by the restriction that the National Boards do not lead in introducing subject matter. The questions had to reflect the content now being taught in medical schools. Unlike biochemistry, physiology or microbiology, the behavioral sciences represent many disciplines and cover different topics which are taught in many different ways in various schools. Some stress sociology, some community medicine, some psychology. This complicated the task of developing questions that reflect what is currently being taught.

The participants indicated that many suggestions about the kinds of knowledge and concepts that should be included had been made during the four conferences and could be picked out of the reports by the test committee. They suggested further that the questions should be problem oriented and that test methods more suitable for evaluating a student's grasp of behavioral science material be explored. These might, for example, include use of moving pictures or video tapes to present cases on which the students would be asked to comment.

In order to develop meaningful problem oriented questions, the participants said, we need to specify how much behavioral science knowledge a physician needs to deal with a patient's nonmedical problems or to be able to refer her to appropriate social agencies. We should specify, for example, what physicians should do, in addition to providing medical care, for unwed mothers who come to them for obstetrical care. However, too much emphasis on concreteness in the examination questions should be avoided. This can create a tendency for the evaluation to dictate the objective. There is a risk that medical schools could end up teaching whatever is most easily testable, rather than what will help students become the best possible physicians.

A few participants suggested that the National Boards should be abolished entirely. If they were eliminated, the funds now used to support them could be used to establish a national center for evaluation of medical studies. This center would have a collection of experts who would apply the best skills that are available to help schools formulate procedures for examinations within the schools themselves. This center would also do curriculum studies and serve as a collection point for materials relating to the improvement of curricula. This would be a mechanism functionally geared to cover the entire span of medical education and would meet needs for which no effective resource now exists.

Other participants felt that with all their weaknesses, the National Boards do serve some useful evaluative functions and that these can be strengthened by extensive changes in the structure of the examination. The Boards should continue to exist for those who wish to take them, and the students should be able, voluntarily, to take whatever parts of the examination relate to the fields they plan to enter. A proposal of this sort might be sufficiently conservative to gain acceptance of the Board of Examiners and yet would be a valuable mechanism for bringing about much needed changes. Perhaps, several participants suggested, the behavioral sciences should take the stand that they do not wish ever to become a required part of the National Boards and that, furthermore, they believe that no other subject area should be an absolute requirement either.

Other possible methods of evaluating student competence in addition to the National Boards were touched upon lightly in the conference discussions. The question is, the participants said, what are the important things to measure? Is it more important to quantify the exact amount of factual information a student has absorbed, or to judge his overall competence to function as a physician?

According to a participant, a student medical education task force came to the conclusion that the best way to evaluate the student is to have him meet for informal discussion with a group of people who are involved in the kinds of things he plans to do. This sort of discussion gives a pretty clear idea whether a student is competent to do the things that are expected of a physician in the particular kind of career he has selected.

Not all of the participants agreed that this would provide an adequate basis for evaluation. If I were a patient, one of them said wryly, I would be much more interested in knowing how much factual knowledge my doctor had about my particular disease than in knowing that he was a well-rounded, social individual who could carry on a good intellectual discourse.

Several participants indicated concern that personal evaluations are often unreliable. They may range from the evaluation of someone who has known the student continuously and intensively over the four year period to the angry input of a staff doctor who encountered him for two hours one day when everything happened to go wrong. One possible method of evaluation would be to have students evaluated by the faculty panel members who have helped develop the student's individualized curriculum and have known him over a period of time.

Criteria need to be set for assessing the validity of the various types of ratings on which the evaluation of the student is based. This should be a two step process. The first objective should be to determine whether there is a legitimate core of behavioral science knowledge that every medical student should have, and the second objective should be to devise appropriate means of evaluation.

BEHAVIORAL SCIENCE COMPONENTS OF MEDICAL EDUCATION

The various disciplines bring their wares uncontaminated and very nicely packaged to the market place of the student and expect him to make choices about what to buy.

The boundaries of medical education are really what the people in medical education, whether faculty or students, are interested in.

With so much time pressure in the curriculum, how does one decide what to include and what to leave out? In some medical schools, students start lectures at 8 in the morning, get an hour's break for lunch and continue until 5 in the afternoon. Every hour, every course is compulsory for the first two years. The students have absolutely no choice. They are given so many examinations that half of the time they are up all night studying. Whatever behavioral science content is offered is apt to be jammed into 36 hours at an awkward time in the curriculum.

In a situation of this kind, how can the behavioral scientists make an impact? In 36 hours, how can they give more than a once-over-lightly kind of coverage. The once-over-lightly approach turns students off. They want practical knowledge, not vague generalizations. They want to learn techniques for doing things. The problem is not that they don't like what the behavioral scientists teach; it is that they want it presented in more depth. One could easily use up the whole 36 hours on autonomic functioning or on behavioral therapy or the drug problem.

Is the best solution to teach one thing well and leave out all the rest? If so, what should this one thing be? What would make the more valuable single set of 36 lectures?

In attempting to answer these questions at least in part, the participants discussed curriculum components in three contexts:

- some of the core concepts and areas of knowledge that should be included in medical education
- interviewing as an example of one specific behavioral science skill that medical students need to master

- three specific content areas and their implications for medical education

The participants discussed the curriculum issues from a broad base of experience. Disciplinary identifications of the behavioral science participants covered a wide range, so they had taught a great variety of behavioral science courses from anthropology, medical economics, psychiatric epidemiology and human ecology to the sociology of medicine as a profession. Teaching experience extended from teaching undergraduates to teaching medical students, interns, residents, postgraduate students in public health, faculty, paramedical personnel, and physicians in practice. Some participants were identified in their teaching primarily with clinical practice, others with public health or the administrative aspects of delivering health care within the total system. One participant was involved not only in teaching the behavioral sciences to medical students but also the other side of the coin—channeling graduate students in the behavioral sciences into the medical subculture.

The background of the student participants was equally varied. Some came into medical school from pre-med backgrounds, some had majored in psychology, political science or other fields as undergraduates. One had a master's degree and three years of teaching experience in mathematics.

The kinds of behavioral science training that the student participants had had ranged from no formal course work at all to two or more years on programs in which the behavioral sciences have full weight with other basic sciences. One student reported that there is not only no behavioral science requirement at his school but that there is no time whatever for behavioral science electives. This was the exception; most of the students had had some courses, either required or elective. Their curriculum emphases had included such courses as medical sociology, decision-making, biostatistics, health care delivery systems, child development, the neuroses, psychology, psychiatry, and personality theories of psychopathology. Some of the courses involved field work with a family unit, others with patients in a mental institution. Some involved behavioral science research on such problems as motivation and behavioral change in ghetto children.

Core Concepts and Areas of Knowledge

The whole field of medicine, including medical education, is in process of evolving. Knowledge is still being created in this area as well as in the biological sciences. Some participants therefore indicated that it would be premature to try to define at this time precisely what behavioral science materials should be included in the medical curriculum. A curriculum that is relevant now may not be so five to ten years from now.

However, most participants agreed that there is a body of behavioral science information which has to do with basic human behavior. From this can be extracted the facts and theories that have to do with behavior as it relates to disease and/or medicine. These need to be synthesized to create a core of medical behavioral science which every medical student should master. Anyone who is going to accept full responsibility for the care of patients needs to be exposed to the principles of behavioral science which relate to patient care, and we should not shy away from insisting that the material be included in the curriculum simply because some students will not consider it relevant to medicine. These principles are of such importance that they should be dealt with in each school in the same way that other important curriculum issues are dealt with. In some schools, presenting the behavioral sciences entirely on an elective basis may meet the need. In others which adhere to a core curriculum, it would be a great mistake to exclude the behavioral sciences from the core, because the students would perceive this exclusion as indicating that behavioral science knowledge is second-class material.

The participants differed on the degree to which a behavioral science concept should be proven to be of worth before it is included in the curriculum. Some said concepts should be taught to a few selected physicians and the usefulness of this instruction evaluated before any move is made to introduce the concept into the general curriculum. Others pointed out that this would take an impossibly long time and that very little curriculum material in any field is introduced in this way. Curriculum has to be developed on the basis of rational assumptions about what will be useful if we are to get anywhere at all in bringing about change.

Decisions about what constitutes the crucial core of knowledge have to be made jointly by behavioral scientists and their medical colleagues, most participants indicated. The different disciplines need to work together to determine how their individual bodies of knowledge can be integrated for presentation to the students. Because this kind of communication is often lacking, there is at the present time a very peculiar tendency to put the full burden of selecting, synthesizing and integrating knowledge on the students. This makes no sense. It is in the very nature of a professional curriculum that is problem-centered that part of the task of synthesis must be done by faculty.

This should be a dynamic effort that takes full advantage of new knowledge and new methods, but many medical schools continue to present traditional curriculum materials in the traditional way. As soon as attempts are made to include any theoretical or conceptual behavioral science materials, the curriculum committee decides it is all "Mickey Mouse."

Students, and very often medical faculty, consider biochemical and physiological processes to be at the heart of medicine. Therefore, physicians and behavioral scientists need to get together and decide how they can present conceptual models of the way these processes interact with environmental factors and the whole human ecology. At present, there is no medical school in which this total ecological picture is presented; but it could be.

The most frequent pitfall encountered in teaching behavioral sciences to medical students has been the tendency of the behavorial scientists to act as if the developing physicians want to become behavioral scientists. They do not; they want to become doctors, and they want to learn the parts of the behavioral sciences that are important to their work as doctors. Biochemistry, anatomy and other basic sciences tend to fall into this same trap of trying to offer the information of their fields in too much detail to medical students.

Sometimes the curriculum gets heavily overloaded with material on a particular subject. For example, physiology, biochemistry, pharmacology and several of the clinical disciplines may all be presenting material on the Krebs cycle. The students may be up to their ears in the Krebs cycle, yet get little of value out of the material because it is not offered as part of an integrated presentation on psycho-physiological functions.

Some of the confusion about curriculum content is generated by the attitudes of the students, some participants said. Half facetiously and half seriously, a behavioral scientist complained that he and his colleagues on medical school faculties are being victimized and whipsawed by the students who demand first one emphasis and then another. As he put it:

> They come on strong. Let us revolutionize the institution of medicine, they say. Let us completely revolutionize medical distribution. Let us alter, let us change, let us grope for new visions. Then they threaten: give us only the content of the behavioral sciences that will apply to specific kinds of clinical problems or we will turn you off. Give us the gut material.

> On the other hand, they raise strong issues about the definition of a good physician and the things medical students need to know to be good physicians. So the faculty tries to give them a grasp of the basic, fundamental knowledge that can illuminate their vision of culture or society, and they say, don't give us that . . . . Give us the facts, man; we have to pass our exams. So when you say OK, I'll give you the facts, they say, but we want to Change the World!

This statement, which the chairman dubbed "sheer eloquence," brought appreciative laughter and applause from the other participants, including at least some of the students. It was also answered seriously.

As discussion of curriculum content progressed, three viewpoints emerged among the participants. Some argued for major emphasis on a conceptual core of knowledge; some argued for a pragmatic, problem-oriented approach; and some—definitely the majority—argued that it is not an either/or case: both the conceptual and the factual knowledge must be included in the curriculum.

Medical students need to be familiar with some of the specific behavioral, biological and experiential factors that contribute to people's problems. This is particularly true in relation to people in deprived economic circumstances, several participants suggested. It is important for the student to realize that the individual child he sees in the hospital who has been deprived or made ill by his environment represents a whole group of children who are at risk because of the kind of environment in which they are growing up.

Students need to be encouraged to look at features in the environment that affect the development of children and contribute to inadequate outcome—particularly in cognitive development—such as experiential family factors, lack of medical care and inadequate diet. They need to know that poor health of mothers prior to and during pregnancy affects the outcome of pregnancy, contributing to prematurity and other obstetrical complications which have long range negative consequences for children.

We need to help students focus their concern on the cycle of poverty begetting poverty. They need to realize that poverty provides a framework within which poor children—particularly, in this country, poor black children—not only have more health problems than other children but also do less well in school, perform less well on tests of intelligence, are less likely to find jobs, and when they find them are less likely to find good ones, and come up short-changed in many other ways.

In presenting behavioral science materials, we need to avoid falling into the trap of using words like "deprivation" which suggest deficit models about groups of people. We have to face the fact that a child born under poverty conditions is going to have certain problems. That's the road he is on. But we have to look beyond this to the conditions that keep the destructive cycle going and see what can be done to correct them. It is simplistic to say that these are merely dull children of dull parents. It is impossible to discuss genetic differences between subgroups of a given population in situations where there is no equality of environmental opportunity—and in this country we do not have equality of environmental opportunity.

Physicians and behavioral scientists talk about "the patient as the consumer." What they are really talking about is the patient with money who can make certain demands for service. They are not relating to the whole concept of patients. This is a critical issue, and the medical schools are not dealing with it. Medical students need to be prepared to create a system in this country in which medical assistance will be within the financial reach of everybody. They are not getting this kind of training now.

Physicians and behavioral scientists have the attitudes they have because someone trained them that way. They deal with the problems of poverty level blacks the way they do because that's what they were taught to do. Unless another generation of doctors is to come along who have been trained the same way, something is going to have to be done about people who perpetuate distortions and misconceptions, like the ones who propose to identify criminal tendencies in particular groups before the age of six. The business of putting people into pigeon holes extends even into the area of diagnosis. If a teacher comes up against problems she can't deal with in a student, all she has to do is describe a certain group of behavior patterns and a doctor will concur: this child is mentally retarded or that one is emotionally disturbed. He'll give some shots to pep the child up or slow him down, and off he goes into whatever slot he seems to fit.

If students are to grasp the valid implications of behavioral factors in human health and development, the information can best be presented in logical sequence. In dealing with a topic like brain damage, for example, students might first learn about the clinical manifestations, using patients as case examples when they are available. Then they might move into consideration of etiologies such as prematurity and other obstetrical risks. The question of social class distribution of brain damage can be brought into the discussion, and the fact that such conditions are more common in people who are economically and socially deprived. Next, the implications of brain damage for later development and its effects on ability to learn in school can be linked up with the broad implications of the intellectual failure or retardation which is often the presenting problem with brain damaged children.

When a child is admitted to the hospital with pneumonia, the physician's proper concern is to treat the pneumonia first. But if he is sensitive to broader issues, he can use the time the child is in the hospital to look at some of his other problems and try to find a way to solve them. If we can increase the awareness of medical students, we may make them more attentive to factors that they might overlook if they have not been encouraged to examine problems in depth.

It is just as important to teach students how to think, how to identify relationships and solve problems, where and how to get factual material, and what kinds of resources are available to them as physicians to help solve the problems of their patients as it is to provide a firm theoretical and conceptual base of medical knowledge. Most behavioral science concepts can be taught as examples of ways to think about patients and the solution of their problems.

The medical record can be organized around a statement of the patient's problems, hypotheses about each, and the follow-through involving laboratory reports and treatment. The perspectives of the medical students can be broadened by applying behavioral science insights in ranking a series of problems which include both the major manifestations of the disease and the related social problems. This technique was developed by Dr. Lawrence Weed while he was at Tulane. It is a method for both defining and solving problems in clinical medicine. It avoids the use of the disease concept. The disease concept is very helpful in understanding the etiology and pathogenesis of certain abnormalities of human anatomy and physiology. However, it is not useful in describing the patient's behavioral pathology. In other words the disease concept focuses attention on the biophysical side of illness and obscures social and behavioral problems which are often the central element of the patient's request for medical attention.

To give an example, if a young mother comes in with cholecystitis, one of the principal manifestations will be pain in the upper right quadrant. Under Dr. Weed's system, this would be listed as one problem. If the patient has left a houseful of children at home with no one to care for them, this would also be listed as a problem. Indeed, it may be a problem of far greater concern to the patient than the pain and may be ranked above it in importance.

This ranking of problems enables the medical student to see the biological factors and the social factors in correct perspective in relation to each other and develop solutions on the basis of a unifying concept system that gives attention to both. There is pain in the upper right quadrant, so certain logical medical steps will be taken: pain killers will be administered and tests will be done to see if surgery is necessary. The pain has also created incapacity to cook supper for the hungry kids at home, so steps will be taken to see that the children are cared for. With this emphasis, the student gets away from the intensive focus on pathogenesis. He gets a strong translation from the diagnosis of problems to action which will solve the problems. By looking at the problems from a biosocial point of view as empirically observable, studyable phenomena, the student can grasp the relevance of what he is learning.

Although it is difficult to make a statistical view of life electrifying, students should be taught the significance of certain types of data and where it can be found. For example, they need to be aware that data on people's marital and family status, whether they are employed or unemployed, what income they have, etc. show correlations with the state of their health. They need to know that data on children with many types of illness show that the vulnerability of children can often be predicted from family status. Behavioral scientists should be available to students throughout their medical education to help them focus in on this kind of information.

Faculties have a strong obligation to the students to look at new information from many fields and disciplines and try to see what needs to be added to the medical curriculum. For example, there is a tremendous amount of knowledge about comparative behavior across species available now that was not available when today's medical educators were in college and graduate school, and some of this could be very useful to physicians in understanding problems they encounter in practice. Much behavioral science information relevant to medical problems is available in the professional literature of different fields. It needs to be pulled together properly and integrated into the medical curriculum. Several participants suggested the need for workshops to pin down specific curriculum content in detail. However, a few of the behavioral science concepts and techniques that physicians particularly need to know in order to provide true health care were specified. These included:

- psychosocial interaction
- effects of maternal deprivation
- effects of the presence or absence of the father in the home
- social expectations regarding role behavior of different members of the family
- socialization processes that affect the child's self-concept
- the relationship of behavioral modification to nutrition and other aspects of development
- legal and political processes that affect the well-being of children in such areas as adoption, child abuse, and eligibility for financial assistance
- the effect of cultural environment on biosocial mechanisms
- principles of human and animal behavior and personality theory
- principles of social organization, including theories of value orientation, equilibrium, competition, and small and large group organization and process
- principles of communication, including basic concepts and such skills as interviewing and history taking
- human sexuality and other knowledge areas which bring into focus the relationship of the biological, neurological and behavioral sciences.

Interviewing: One Behavioral Science Skill

Although the participants frequently mentioned the importance of training medical students in the use of specific behavioral sciences techniques and skills, they discussed only one at any length. This was interviewing. Training physicians to be good questioners and good listeners when consumers discuss their health needs and problems should be part of medical education not only because it is therapeutic for the patients but because the physician may recognize important health-related clues in what they say.

The interview can be used as a central paradigm from which to teach medical students about all kinds of medical care issues from the most theoretical to the most down-to-earth ones. The best way to reach a student is to start where he is, and the interview situation is one that hits him close to home because he reacts to it emotionally. He is, in fact, scared to death; so the starting point is to examine interviewing in the context of the student's feelings about it. After he has had a chance to come to grips with that, he will be able to listen to what else the professor has to say and utilize his entire experience to deal with patient problems like anxiety, family issues and death in a sophisticated and successful way.

Sometimes, however, the interview situation arouses anxiety in the student in such a way that he becomes resistant; for example, something a patient says may trigger off an awareness of the student's Oedipal feelings or a sense of guilt about some other inner reactions of his own. Such reactions are insightful, but because they are also anxiety inducing in the psychiatric sense, they need to be worked through before the student can become skilled and comfortable in his interviewing techniques.

One of the first things a student needs to learn about interviewing is to separate his own reactions from those of the patient. One student, floundering through his first interview with a patient, asked her, "Do you think doctors are competent?" This had nothing to do with her immediate medical problem; it was simply an expression of the student's anxiety about his own level of competence.

Students also need to learn to distinguish between empathy and sympathy. A tape of an interview with a mother whose child has just died of leukemia frequently sends the students into tears. This provides an opportunity to discuss with them how they can handle their own emotional reactions to tragic situations in the lives of patients so that they will not, as physicians, break into tears at times they need to be sustaining and strengthening the patients and their families.

The students themselves become skillful teachers of their peers on the question of the appropriate level of sensitivity to what the patient says. After listening to another student conducting an interview, they will say, "You weren't interested in that point; you cut that patient off and missed the real issue." An interview is not really just a matter of asking the patient questions. It is a matter of being alert to the way the patient feels about things, as well as discovering his specific medical complaint.

Interviewing is essentially a communication skill, of which the goal is an informative history. People have a lot of skill in communicating; after all, they have been doing it all their lives. But when students first start interviewing, they are so worried about relating to the patient that they get, as one participant said, "all clutched up," and can neither talk to him nor listen receptively. To overcome this, the first patient interview can be done on a group basis. Small groups of students talk with a mother and child, while someone writes down all the questions and answers that are asked and given. Although no one student is able to conduct a meaningful interview, one by one, they all contribute. Usually they elicit, as a group, as good a history as an experienced physician would have obtained; and this gives them confidence in their own ability.

Next, they interview each other individually. This provides an experiential base so that they are able to function more easily and competently when they go into the community to do their projects. The experience is programmed in an orderly sequential fashion from one element to the next so that the students can move effectively toward their goal. It works better than throwing them into a pond and expecting them to overcome their anxieties enough to be able to swim to shore.

However, even after a great deal of classroom preparation, including interviewing classmates and watching the professor interview patients, the first home interview is still a traumatic experience for the student. Consequently, a "one shot" interview is not apt to be as effective as a series of interviews over a period of weeks with the same family and collateral people involved in the case. With this method, the students can really begin to get hold of the situation.

In a variation of the group interview approach, other schools send students in pairs to talk with people in their own homes about experiences they and their families have had with illness and medical care. The students alternate responsibility for asking the questions and recording the conversation as nearly verbatim as possible. The wide variation in responses they receive is eye-opening for the students, and they follow up on it by discussing in small groups what they have learned during the interviews.

This technique can be particularly useful in courses focused on how and why to get medical and social data, if multidisciplinary teams are sent to interview the same family. For example, a medical student and a graduate in anthropology may be sent out together. By writing up their notes separately and then comparing their interpretations of what is going on, the students get a broader grasp of the total situation.

The level of student receptivity to anything they are learning depends upon their readiness for it and how relevant it seems to them to what they are doing. Students going into a home to obtain the history of a hospitalized patient return with entirely different material than those simply sent out to ask general questions. Furthermore, they will discover that patients at home react very differently than patients in an institution.

Home interviews with the patient and his family, and interviews with other people in the community who are concerned with the case, serve another important function. Students who learn about the use of community resources not in the abstract but by working closely with an experienced social worker and an active practitioner to meet the needs of particular patients will carry over this broader orientation into their work as private physicians. It is like the difference between studying diseased cells under a microscope and studying, in his natural environment, the animal from whom the cells are taken.

Three Content Areas

Behavioral science content in medical education may center around a specific disease entity such as atherosclerosis, a biosocial problem such as human deprivation, or a biobehavioral model of man which builds the conceptual bridge between the physiological and behavioral aspects of medicine. These three content areas were explored by the conference participants as examples of the types of material that need to be included in medical education, in terms of factual information, pertinent behavioral science research, the significance of the ethological overview of medical problems, and awareness of the many types of observation and service involved in the solution of medical problems.

Atherosclerosis: Behavioral Science Components of Prevention and Control

In the United States, one in every five men develops coronary disease, and one in every 15 dies of it before the age of 65. Atherosclerosis, the form of coronary disease which involves the blocking of the arteries by fatty deposits, has reached epidemic proportions.

Because such a large part of the practice of many physicians involves the care of patients with atherosclerosis, and because it is a disease which has such far-reaching behavioral and social effects on the lives of patients and their families, this disease is a particularly good model for teaching the behavioral sciences in a medical context. During the fourth conference, Dr. Joseph Stokes III, Dr. William B. Kannel, and Dr. S. Leonard Syme discussed the characteristics of this disease, its epidemiology and risk factors related to it. The panel and other participants then explored the ways that the social and behavioral sciences are involved in such solutions as development of preventive programs for atherosclerosis, and the implications of these relationships for medical education.

Atherosclerosis is a disease so big, so generalized and so common that it took a long time for pathologists or anyone else to recognize it as a disease at all, said Dr. Joseph Stokes III, Professor and Chairman, Department of Community Medicine, San Diego School of Medicine of the University of California. For a long time, atherosclerosis was considered to be a natural process of aging. This is a great way to obscure ignorance about any disease—and it did, even though defining atherosclerosis is not really particularly difficult. It has many analogies to problems of plumbing. Basically, the disease relates to the function of a pipe and the fluid that flows through it. As any housewife who regularly puts grease down a drain knows, sooner or later the pipe will become clogged and she will have trouble.

Atherosclerosis is slow to develop and requires a long period of time. It begins in childhood with fatty streaks on the large arteries of the body. Serum lipids are also involved, because cholesterol, which has a lot to do with arterial blood pressure, is carried on a lipoprotein fraction in the blood.

Clinical manifestations caused by interference with organ blood flow do not appear until late in the disease process. We have poor tools to measure its early development, and those to measure the secondary stage are also clumsy. Inability to diagnose the disease in its early stages is one of the problems that makes definition and management difficult.

Study of the circumstances under which coronary disease arises, evolves and terminates fatally in the general population has shown that the only strategy that is likely to have a major impact on coronary mortality is primary prevention, said Dr. William B. Kannel, Medical Director of the Framingham, Massachuetts Study of the National Heart and Lung Institute. Mortality cannot be reduced by focusing on persons in whom symptoms have already appeared, since about 20 percent of all first coronary attacks present as sudden, unexpected death. The entire course of the illness from start to finish is over within a matter of minutes. More than half of all coronary deaths occur this way, and two-thirds of these were unheralded by prior symptoms or overt evidence of coronary disease.

The bulk of coronary deaths occur outside the hospital, out in the community. Only about 40 percent are hospitalized and only 12 percent of the sudden deaths occur in hospitals. Even in patients with prior coronary disease, only 15 percent of the deaths occur in hospitals.

This indicates that the problem of coronary deaths—both initial attacks and recurrences in patients with established coronaries—must be solved out in the community, not in the hospital. The only road to substantial reduction in coronary mortality is the prevention of sudden death. This, obviously, requires identification of potential sudden death victims and the factors which make them vulnerable.

The background of the sudden death victim is virtually identical to that of the potential candidate for any coronary attack, fatal or not. It is well known from clinical and prospective studies such as those at Framingham, where research has been in progress since 1948. The attributes of potential coronary victims have been established by studies of more than 5000 men and women classified according to suspected precursors. These findings have been confirmed in other studies.

Two factors which need further clarification are family history and stress in life style. Persons who have close relatives who develop some manifestation of atherosclerosis early in life seem to have an increased risk of developing a coronary event themselves. Families share more than genes, and these phenomena could be due to shared environmental factors. For example, the spouses of subjects who develop coronary disease show an increased propensity to do so also. It is evident that something these spouses share is not good for them. As might be expected, they share a number of things. They share eating habits. They share obesity. The "Jack Spratt could eat no fat" adage does not really apply. Fat men tend to have fat wives and vice versa. Husbands and wives share the cigarette habit. They even share blood pressures to some extent. More research needs to be done on familial aggregation and its environmental and behavioral determinants.

Stress in life style is hard to pin down. What is stressful to one individual may be enjoyable to another, or at least not traumatic; and the way a person perceives and copes with stress is as important as the traumatic experience itself. People react to stress in different ways—some with their gut, some with their bronchial tubes, some with emotional outbursts against their families.

Each of a number of risk factors has been shown to at least double the risk of a coronary event. Among these, four stand out as being readily and simply measured, common in the population, and avoidable or correctable. These include hypertension, hypercholesteremia, the cigarette habit and obesity.

In considering risk associated with any factor, one must consider related factors as well. For example, while hypertensive blood pressure levels are associated with substantial risk, the probability of coronary attack in a hypertensive is also related to the cholesterol value. A cholesterol level which constitutes no more than the standard risk of the population in normal tensives may be a formidable risk in hypertensives. The presence of multiple risk factors has an additive effect which mounts progressively in proportion to the number of categorical risk factors present.

Correction in the general population of the faulty living habits contributing to coronary risk, such as too rich diet, too much food, sedentary living and cigarette smoking could lower the overall level of coronary proneness. Although the potential reduction in coronary morbidity and mortality that could be achieved through application of current knowledge to the task cannot be estimated precisely, data from Framingham suggest that a change in these four risk factors could reduce the coronary incidence in highly vulnerable young men by 90 percent. A lesser impact would be expected in older persons; but even there, the potential for salvage is great.

Public health action in the form of environmental control which does not require individual initiative or motivation will be required to reduce the large reservoir—probably a quarter of the adult population—of undetected or potential coronary disease. This is not a simple matter. Our therapeutically oriented medical care system is already overburdened caring for those who are ill and makes little provision for preventive efforts. One stumbling block is the attitude of physicians. Prevention of cardiovascular disease requires attention to what many physicians regard as medial trivia. Both doctors and patients prefer pills rather than recommendations like, "Lose weight, change your diet, give up smoking, get more exercise." Why should a patient pay $25 for that advice when he is getting it free from his mother-in-law?

These attitudes need to change. Physicians must come to regard the occurrence of strokes, coronary attacks, congestive failure and peripheral vascular disease as medical failures rather than as the starting point for medical management.

Detecting and coping with the precursors of disease is properly a community concern. Primary preventive efforts need to be integrated into the medical care system through industries and labor unions, the armed forces medical establishment, school health programs, state, university and veterans hospital systems, and public health facilities. Resources must be developed for coping with the preventive care needs of high risk individuals who are identified. It will do no good to uncover hordes of coronary-prone people if they will then be sent to physicians who cannot or do not care to provide preventive management.

For an effective, sustained preventive effort, a team approach is needed. Physicians, public health nurses, nutritionists, physical culture experts, sociologists, and other behavioral scientists all need to be involved in developing screening and diagnostic facilities which are linked to community resources for prevention and care.

There is much that we need to learn about coping with risk factors, and it is here the behavioral scientist is particularly needed as a member of the team. He can help determine what features of the life style of individuals promote risk, and he can help identify ways that the biochemical and physiological precursors of atherosclerotic disease can be avoided and corrected.

The behavioral scientist can also illuminate the social and psychological concepts which relate to the problems of various diseases, said Dr. Leonard Syme, a sociologist and professor of epidemiology at the University of California School of Public Health. For example, the behavioral scientist can study the relationship between coronary heart disease or ulcers or arthritis and phenomena like mobility or anxiety.

Within the United States, there are tremendous differences in death rates from coronary disease in different parts of the country. The rates are two or three times higher in the eastern and western industrial states than in the rural midwestern states. North Dakota, for example, has a very low rate; New York a very high rate. The difference is so extreme that the rate of deaths from all causes in North Dakota is not as high as the coronary mortality rate alone in New York State. This is not just a difference in diagnostic customs and certifications.

Facts like these suggest that there may be something about urbanization that is involved. This hypothesis is supported by the findings of a study in North Carolina which focused on the change in coronary death rates in various counties—all of them originally rural—as some became urbanized over a 10 year period. Among the originally rural residents, the highest coronary rates were in the counties that had experienced the most dramatic urbanization.

However, urbanization is not the whole story, and other contributory factors need to be identified. One investigator explored psychological patterns in men who had not had heart attacks, giving special attention to a pattern in which anxiety, hostility and aggression were combined. No association between this pattern and the later occurrence of heart attacks could be found, although this pattern appeared frequently in men who had already suffered an attack.

There are at least five types of studies through which social and behavioral scientists can contribute significantly to medical knowledge and medical education in relation to coronary disease. These are:

- descriptive or demographic studies
- studies of personality or psychological traits
- studies of life's dissatisfactions
- studies of mobility or incongruity of status
- studies of coronary-prone behavior patterns

Retrospective and prospective studies in the fifth category, coronary-prone behavior patterns, have divided people into Types A and B. Type A people have more coronary heart disease than Type B people. Type A people behave in competitive, time-oriented, goal-directed ways. They are ambitious, restless and have a profound sense of time urgency. They show such somatic and motor manifestations as fist clenching, desk pounding, facial grimacings and keyed up body movements. They move rapidly and attempt to condense or hurry the speech of others. Although suggestive data have emerged from some of these studies, many of the findings are ambiguous and need to be tested more fully if they are to provide reliable guidelines for physicians. We need to get past clichés and euphemisms and measure risk factors in ways that make it possible to assess the difference that different factors make in the incidence and prevalence of disease.

If the epidemic of atherosclerosis is to be halted, Dr. Stokes said, first priority should be given to a large cooperative trial project on primary prevention. High risk individuals should be identified by screening for hypertension, hyperlipidemia and other factors. Those so identified should be divided into two groups. One would serve as control. With the other, there would be systematic intervention. The rates of morbidity and mortality from atherosclerosis would be followed for a period of five to seven years.

We know that systematic intervention is going to be necessary for control and prevention of this disease. As long as we must rely on individual response, results will be minimal, because it is difficult to get patients to follow their doctors' advice unless their problems are acute and they are motivated by fear of the consequences. As long as they are asymptomatic, they will not be inclined to follow a regimen that involves no more beef steaks, cutting out cigarettes, jogging every day and spending $10 a week on anti-hypertensive drugs. What sort of intervention program can be devised that will get patients to accept restriction over a long period of time in order to avoid some future event?

This is an area in which social and behavioral scientists need to be involved. We need sophisticated motivational studies to determine how we can get patients to adhere to the desirable regimen over a long period of time; and we need to develop programs of environmental manipulation which do not rely on individual initiative or response. These changes are going to have to be equally drastic as those which enforce environmental sanitation for the control of typhoid fever and other diseases. These changes can only be brought about through the efforts of many groups—the medical profession, the consumers, the behavioral scientists and the political, social and economic decision makers of the country.

This public health effort will have to involve battles with the food industry, the tobacco industry, the Food and Drug Administration and the Department of Agriculture. The present system of rating meat, for example, encourages development of meats which have a high fat content. The same is true of dairy products; grading is based on butterfat, which is one of the most unhealthful fats in the food we customarily consume each day. Non-dairy cream substitutes are another example. These are made from coconut oil, which is worse for people than real cream. This should be pointed out to consumers in many ways, including proper labelling.

We should not underestimate the size of these battles, Dr. Stokes said. At the present time the medical establishment does not have enough political sophistication, economic sophistication, or general understanding of human behavior to fight the problem effectively. This is why it needs help from other professions, and it is why medical education needs to give more attention to preparing physicians for preventive medicine.

There are those who believe that a private physician should not bear any more responsibility for preventive medicine than a garage mechanic or auto body repairman has for automobile design and highway safety. His own belief, Dr. Stokes said, is that certainly selected, and probably all, physicians have some responsibility to play a role in prevention.

The behavioral sciences tie into atherosclerosis as a topic of medical education in a number of specific ways, other participants said. Because it is a long-range, life-span experience, atherosclerosis is a valuable model for demonstrating both the behavioral aspects of disease and the characteristics of the social institution of medicine which attempts to treat the disease. This material might be included either in a behavioral science course, when an atherosclerotic patient is being presented to students, or when atherosclerosis is the subject being covered by clinical medical faculty or basic scientists in biochemistry, pathology, physiology, etc. Appropriate content areas include:

- **Distribution of disease**
  We have enough data on atherosclerosis so that it could be used as a basis for teaching students about the cultural, ethnic and national bases of disease.
- **Death occurring outside the hospital**
  Medical students tend to assume that most people die in hospitals in the presence of doctors. Since 60 percent of the people who die of coronary disease are not in the hospital, atherosclerosis is an excellent model for helping the student understand the death process as it affects both the patient and his family.
- **Family structure**
  The importance of family structure versus a gene pool is one element to be considered here.
- **Relationship of culture to disease**
  An important behavioral science concept that bears upon medicine comes out of anthropology: the concept that culture produces disease. The behavioral sciences can help the student understand that a society which is moving rapidly into urbanized, technological forms will manifest certain kinds of disorders such as heart disease and mental disorders.
- **Interaction of life style and technology**
  This relates specifically to history-taking. The behavioral sciences can help the student understand that by examining the economic, social, cultural, historical and political factors in the history of a coronary-prone patient, he may be able to intervene as a physician in constructive ways.
- **Values as they relate to health and disease**
  Medical students need to recognize that each patient has a value system and makes behavioral choices on the basis of this system. He may elect a life style that includes smoking heavily, eating a lot of saturated fat and getting very little exercise. The behavioral scientist can explicate how such consequences as atherosclerosis flow from this value system.
- **Dynamics of changing life style**
  Students need to know that it is not enough to tell a patient to change his life style or to refer him to someone else. They need to learn how behavioral change can be induced.
- **Personality attributes of coronary-prone individuals**
  Much of the data on the relationships of personality types to specific diseases has been discredited, but some good data is being developed on personality attributes of this high risk population group.

- **Stress**
  The student needs to understand the many ways this term is used and what it has to do with physiology and biochemistry as well as with the emotions. He needs to know how to define and analyze different types of stress that may affect what he, as a physician, can do for a patient with atherosclerosis.
- **The interrelationship of biochemistry and behavior**
  The student needs to know that biochemical changes may be a result of behavior as well as a cause of behavior, and that behavior may be a result as well as a cause of biochemical change. This is an intriguing notion to many students because they have usually learned it only one way around: that biochemistry and molecules dictate behavior. They are often not aware that behavior alters and prescribes biochemical and molecular reactions.
- **Relevance of animal studies**
  By learning how important animal studies are to understanding atherosclerosis in humans, students also become aware of some of the ethical and practical problems of human research and the value of animal research as an alternative approach.
- **The role of the physician in prevention**
  Because atherosclerosis demonstrates the need to go beyond the classic dyad of physician and patient in a one-to-one relationship and reconstruct the very role of the physician, it has profound implications for medical education. If the concern for maintenance of health as opposed to treatment of disease becomes a fundamental focus in medical education, it will greatly change the students' perception of the role of the physician.
- **Amassing political support to bring about health improvements**
  Medicine has a lot of political power, especially through the American Medical Association; and this should be used for constructive causes. Students should learn how medicine can enlist lobbyists, the lay public, politicians and others to bring about prevention and control of disease.
- **Quality of life as a major goal of medical advances**
  We tend to talk as if the goal of medicine is to make people live forever. We talk in terms of life expectancy when we should, perhaps, talk in terms of life span, with a concept that there ought to be graceful ways of exiting at the end of that time. A happy, productive life of 75 or 80 years with an

individual dying quietly in his sleep can be a beautiful thing. Sudden death from coronary disease is a much pleasanter way to go than lingering illness, so it is not in itself undesirable. What we need to get across to medical students is that people should not die *prematurely* of atherosclerosis, and that they should live in a state of health rather than in a state of incapacity.

Human Deprivation: Presenting Observable Realities

The content of behavioral science teaching in the medical schools needs to center around observable realities in the caretaking process, said Dr. Nathan B. Talbot, Charles Wilder Professor of Pediatrics at Harvard University and Chief, Children's Service, Massachusetts General Hospital. Medical students need to be exposed to these realities systematically and comprehensively. By becoming aware of the web of causation of which medical problems are the end result, the students learn what they need to know to bring about favorable changes in the patient. To demonstrate how the behavioral sciences can be integrated into medical education in a meaningful way, Dr. Talbot presented several case histories and described one teaching strategy used at the Massachusetts General Hospital.

Dr. Talbot's current interest in emphasizing behavioral sciences in medical education, research and practice is an outgrowth of his earlier work in the fields of pediatric endocrinology and metabolism. More than 20 years ago, a nine year old girl was brought to Massachusetts General Hospital presenting the primary complaint of dwarfism. She was the height of a four year old and the weight of a two year old. No deficiencies in the endocrine metabolic system could be identified, but the fact that she was underweight for her height suggested caloric undernutrition. Under the controlled situation of the hospital, the child began to show improvement. After six weeks, she was sent home with instructions that her caloric intake was to be kept high.

When she returned for a checkup six weeks later, she was as stunted and skinny as ever. The improvement noted while she was in the hospital had not continued after her return home.

The medical team began to look more deeply at the realities. They found it was true that the child's caloric intake was poor, but that this related to lack of appetite rather than a maldigestion problem of any sort. So, the next logical question was, what caused her appetite to be poor.

They discovered that the child had come out of a very inadequate home environment. She had been moved into a good foster home by a welfare agency. The foster parents wanted to adopt her. However, the biological parents would not release her for adoption, even though it was apparent that they had no real interest in her. Also, the welfare agency would not approve the request of the foster parents to adopt the girl unless they could first demonstrate that they could fatten her up and improve her health. But the child could not improve. She lived in a constant state of anxiety induced by the threat of separation from her foster parents and the tense relationships among all the adults in her life.

Here was a complex intermix of behavioral, biological, psychological and social phenomena. To bring about the desired improvement in the child's medical status, it was necessary to identify the variables and choose wisely what should be the target of therapy and what should be the index of success or failure.

The target selected was gaining the parents' consent and overcoming the legal obstacles to adoption. Other approaches could have been tried: the child could have been stuffed with food or given growth hormones, or everybody could have been given psychotherapy. But it seemed more logical to hit at the core of the problem.

The results were spectacular. Once adoption was achieved and the separation anxieties of the foster mother and the child were relieved, the child grew like a weed.

This illustrates the intrinsic tendency of human beings to respond to correction of what we might call "psychosocial malnutrition" just as the human organism responds to biological malnutrition with a self-righting reaction. If either biological or social malnutrition progresses too far, it is irreparable. If it is recognized early enough, the self-righting process may be complete and very inexpensive. In this case, the biophysical end product of dwarfism was corrected by recognizing and relieving the most threatening factor in the web of causation.

In dealing with chronic disabilities, Dr. Talbot said, he observed that children were divided broadly into two groups. One group seemed to be doing well and taking advantage, in the broad sense of the word, of all the medical knowledge and resources that were available. They were, in effect, triumphing over their disabilities. The other group seemed to be doing poorly, often being extremely disabilitated by relatively inconsequential problems. Gross observation showed that one difference between the two groups was that those who did well had someone who cared about them, while those who did poorly often did not.

Just as every human being requires certain biological supplies, so, too, does every human being require certain psychosocial supplies. These supplies fall into clusters: acceptance, affection, approval; attention, care, protection; control and guidance. A child can have too little or too much of any of these; he may, for example, lack anyone who cares about him or he may be literally smothered with affection. He may be reared in a totally permissive and uncontrolled atmosphere or may be so fenced in by disciplinary controls that he is stifled. When the necessary supplies are absent, the child suffers from psychosocial deprivation. When they are oversupplied, he suffers from psychosocial intoxication.

These forms of psychosocial malnutrition are multifaceted phenomena. They are not single entities. It is important to realize this because therapeutic and preventive effectiveness is contingent upon accurate definition of etiology, as it is in any other phase of health care. The physician is more apt to be successful in treating the patient if he can identify and shoot accurately at the cause of the problem instead of using the blunderbuss approach that scatters a lot of shots in hopes of hitting the right target.

There are many levels of the various forms of interpersonal exchange. You can have lack of affection as a straight deficit. You can go beyond that to active exhibition of hostility. You can have rejection as an active opposite to acceptance, or disparagement as an antithesis to approval. You can have abuse as the opposite of protection, and indulgence as the opposite of limit setting or control.

All of these psychosocial supplies are really biophysical phenomena, Dr. Talbot said. A mother who is pleased with something her child has done expresses this through the neural mode or mechanism that involves messages being sent from the central nervous system to the diaphragm, the vocal cords, the tongue, palate and lips until it comes out in wave lengths of sound that are received by the auditory mechanism of the recipient, who transmits them neurologically to his internal computer system where they are interpreted as having the meaning of approval. These responses seem, at first thought, to be intangible but they are, in fact, part of the biophysical universe.

In childhood, these "pulses of approval" come almost exclusively from the mother. Therefore, in maintaining child health —biological, behavioral and cognitive—it is vitally important to pay attention to the quality of the mother or mother figure as a source of the necessary social supplies. These needs do not have to be satisfied, as the poetic concept would have us believe, by the child's biological mother; they can be met by anyone who can provide the necessary social supplies. The point is that there does have to be someone who provides these supplies if social malnutrition is to be prevented.

The modes by which people transmit psychosocial supplies vary enormously from generation to generation, sex to sex, age to age, class to class and culture to culture. In order to identify when a child is being exposed to too much or too little of the essential psychosocial supplies, we must take all these variables into account.

As a matter of practical pragmatism, what does this tell us about the pediatrician's role in relation to biosocial development? It seems to him, Dr. Talbot said, that the relationship is comparable to the pediatrician's relationship to the orthopedic surgeon. If a pediatrician recognizes rickets due to a lack of Vitamin D in a baby six month old, he can prescribe spaced dosages of Vitamin D which will enable the baby to cure himself without any trace of abnormality, and the total cost will be four or five dollars worth of Vitamin D. If the rickets goes untreated until the child is six years old, all the orthopedists and several hundred thousand dollars won't put him together again.

The pediatrician's relationship to the psychiatrist is somewhat similar. The psychiatrist can do many things the pediatrician cannot, but if the pediatrician is alert to the signs of psychosocial malnutrition and does something about them, the extreme consequences requiring psychiatric intervention may be avoided. If early signs are ignored, the price in human as well as monetary terms can be fantastically awful and unnecessary. The earlier problems are recognized and treated, the faster the child bounds back. The dwarf child, who was nine before her problem was recognized, had lost a good deal of her total growth potential and could never become completely normal, although she showed remarkable recuperative potential considering the severity of her condition.

Dr. Talbot cited several other cases which demonstrated the effects that relief of psychosocial malnutrition can have on the health and development of children.

Two brothers, ages nine and ten, were removed from a home in which they had been grossly neglected and were placed in a state hospital school for retarded children. They were severely underweight and underheight and were so retarded cognitively, socially and culturally that it was not even possible to measure the level of their intelligence. Their social quotient was less than a fourth of their chronological age.

In spite of their severe handicaps, there was some small flicker of attractiveness about them which caused the institutional staff to pay attention to them. Without any supplementary pills or vitamins, they began to grow very rapidly. Within a year, their intelligence level was about double what it had been on admission, and within two years it was four times what it had been. The older child stabilized at a somewhat retarded level, but the younger child showed promise of reaching normal range. Both became attractive children.

This raises important questions about what we, as a society, are going to do about the problem of vast numbers of children who receive inadequate social supplies. In order to come to grips with this in a systematic way, Dr. Talbot said, he and his colleagues are becoming increasingly enmeshed in the community.

In another case, a child was born with multiple congenital anomalies, including a harelip. She really had three strikes against her. Her mother had not wanted her in the first place, she was not interested in child care, and she found the baby extremely unattractive because of her handicaps. As a result, the child was grossly neglected. By the time she was seen at the hospital at the age of 17 months, she was lying flat on her back, apathetic, depressed and not eating. Within four weeks, under the mothering care of a nurse, the child began to blossom out. This is one of the most exciting experiences in pediatric medicine, Dr. Talbot said. These children respond to social nutrition just the way a person dying of dehydration responds to fluid therapy.

Sometimes parents and children become involved in a tragic cycle of mutual retaliation. One child was born with bones so brittle that she broke a bone everytime she did anything. This created a tremendous financial drain on the family because of the prolonged, repeated hospitalizations. As a result, her parents practically locked her in the house and refused to let her do anything at all. She resented this so bitterly that, by her own admission, she would jump down the stairs to break her bones and get into the freedom and glory of the hospital. But this was only half of the coin; about a third of the fractures were caused by the mother, who would get so angry at the girl that she would haul off and sock her, knowing full well what the result would be.

Cases of this kind are a gold mine for the social and behavioral scientist who wants to explore the influence of different sorts of variables on biosocial development, Dr. Talbot said. In many cases the asthmatic child, or the diabetic child or the child with some other chronic condition is placed under severe restrictions of activity, often far beyond what is necessary or reasonable. Or he may be kept on a rigid time schedule centered around his "taking his pills" at the exact moment they are due.

One child who had asthma was perceived by her mother as being far sicker than she was. She kept her out of school 68 out of 180 days, most of the time quite unnecessarily. The girl played out the "sick role" and was as disabled by her mother's and her own perception of herself as if she had had a severe organic disease. In this sort of case there is also often the lack of discipline so characteristic among overanxious parents who fear they will damage the child if they discipline him.

The way a patient and his family perceive his role can be an important index of the success or failure of therapy. Physicians need to consider whether they may be conditioning parents and children into destructive "sick role" behavior by their enthusiasm for giving the child's disease meticulous attention. It is easy, for example, to explain diabetes to a parent in a way that will cause him to become overprotective and overcontrolling. As a result, the child's normal growth toward self reliance and away from parental control may be impeded. The literature and his own experience are full of tragic cases in which diabetic children, reaching the teen years, have rebelled against parental overprotectiveness by becoming alcoholic or obese, having mental breakdowns or getting illegitimately pregnant. There is a lot more to good care of a diabetic than simply prescribing the proper diet and insulin level to control the disease, and it is poor medicine to ignore the other equally important factors.

Psychosocial malnutrition is not limited to children in deprived families. One 11-year-old patient, for example, is the daughter of a college professor and a school teacher. She is an extremely intelligent girl with a strong interest in animal biology. She was brought in because of concern over her great height, which is that of a 15-year-old, and the possibility of slowing her growth with stilbesterol was discussed. Then it came out almost incidentally that she has a reading disability, that her scholastic achievement was dropping sharply, and that for two years she had been pulling the hair out of her own head in great globs. Why?

For several reasons: her parents are too busy with their own intellectual interests to pay much attention to her. She is not accepted by her chronological age mates for two reasons: her nonconforming interests and her height. But 15-year-olds won't accept her either, even though she is their equal in physical development, because her interests do not conform to those of that age group either. Even if stilbesterol is used, the girl faces several lean years until other children in her age group catch up with her in height and intellectual interests; so something beyond medical attention is needed. Three steps have been prescribed as a start: getting her a dog to supply some of her needs for attention and affection, getting remedial reading help for her, and hooking her up with open-ended, no-ceiling opportunities to vent her interest in animal biology through the Museum of Science. Sometimes solutions of this kind work wonders for underachieving youngsters who are insufficiently challenged by their school work and feel isolated from their age mates because of differences in the levels of intellectual development.

In another case, a 5-year, 10-month-old boy who was admitted to Massachusetts General Hospital was the height of a 3½-year-old and the weight of a 2⅓-year-old. His skin was rough and scaly, and scabs covered his entire body. His eyes were inflamed. There were bruises and abrasions on his head and body which his mother reported had been caused by bumping into the stove. He had a pigeon breast deformity and signs of pulmonary infection. He was emaciated and his abdomen was distended. He behaved in a markedly withdrawn manner, and his speech was grossly retarded.

The Visiting Nurse Association had been following this family for two years and had the impression that the mother was a capable person who gave her children good care. However, closer investigation revealed a history of family dissension, burns and other traumatic injuries.

Extensive tests revealed few abnormalities and no clear organic disease—yet this was a very sick child. When put on a standard diet, the boy began to gain weight at a phenomenal rate. By the end of five weeks, he had gained 17 pounds, was normal weight for his height, and appeared well nourished. A month later, he was an active, vigorous child. Retesting with the same type of tests administered when he had first been admitted showed a gain in mental age of ten months in two months' time.

This case is significant, Dr. Talbot said, because it illustrates that the possibility of dietary and psychosocial deprivation must be kept in mind when children show significant retardation of bodily growth and maturation even if the child's parents appear to be intelligent and caring. Failure to recognize this can result in the performance of many unnecessary diagnostic tests and perhaps in delay in correcting the real causes of the child's problems.

The case also demonstrated the extraordinary resistance of the medical profession to consider that these extreme changes can be due simply to environmental factors. Even when all major tests proved to be negative and the child was growing and developing in front of everyone's eyes, it was difficult to convince some members of the physician staff that the problem had not been due to some enzymatic disorder. They found it hard to accept the significant point that the child blossomed out under extremely elementary care. There is no more valuable diagnostic tool in medicine than therapeutic response, and this child came out like a spring flower under the effects of the "corporate parenting" he got in the hospital.

Physicians need help in developing objective, systematic, depersonalized measures of the range of normal activities for various age groups, Dr. Talbot said. Too much of what is presented as normative standards is based rather casually on individual impressions. There need to be observations of masses of children which include consideration of age, economic class, cultural background and other important variables. Many of his own biopsychosocial diagnoses, he said, are based on impressions because of the lack of clear mechanisms of measurement. It is just as vital to have a normative standard for psychosocial behavior as it is to know the normal serum sodium level.

The behavioral sciences, today, are about where metabolism and endocrinology were 30 years ago. They are in the descriptive stage of identifying syndromes and relationships. Just as the basic sciences have been able to move into microbiology, with the application of modern scientific techniques we should be able to move quickly into detailed behavioral science definitions at what we might call the microsocial level. Over the past half-century, a magnificent bloc of behavioral science skills and knowledge has been constructed. This has provided a firm underpinning for the well-informed physician. But there is a huge gap between existing knowledge and what many biophysical primary physicians know and use.

This gap can only be closed by including the behavioral sciences in the medical curriculum and by building behavioral science units into clinical departments just as genetics and immunology units are built in. In order to make it easier for both physicians and students to pin down cases of the kind described, Dr. Talbot and his colleagues at Harvard have developed a taxonomy into which the problems they encounter can be fitted. They have tried to define in very succinct and explicit terms the meaning of concepts like "aggression."

A family evaluation unit has been set up, and each patient work-up is reported on a simple form which covers both sides of a single sheet of paper. This gives the child's status in biosocial terms: physical findings, cognitive findings, behavioral findings. It gives whatever associated causative factors can be identified. It outlines the specific goals of therapy, and it indicates what criteria are to be used as indices of progress, success or failure.

Finally, the record states in very explicit terms what the therapeutic maneuvers are to be. The emphasis is kept on patient care. Medical students are encouraged to see the patient not simply as "an interesting hepatitis case in the fourth bed on the left side," but as a person with many interrelated problems who is entitled to a continuity of care that will resolve as many of his problems as possible. By looking at the total picture of the patient, the students and the medical team come out with very different ideas and answers than they do if they only study the patient on a piece-meal basis.

This method of study has been applied to many children at Massachusetts General. A random sample of 35 of the children was studied to see exactly what kinds of information this comprehensive evaluation produced. All had chronic conditions such as hydrocephalus, mental retardation, asthma, allergies, nephritis, or problems affecting their physical appearance, such as burns or ichthyosis. A high percentage of the families had such problems as depression or absence of the mother, or absence of the father because he was in jail or for some other reason. Three fourths of these cases presented recognizable symptoms of social malnutrition. In about 60 percent of the patients, the families appeared to be major contributing factors in the children's problems. The families, as the principal social suppliers, can be broken into such groups as affectionate versus hostile, accepting versus rejecting, and limit-setting or disciplinary versus permissive. Much can be discovered about their expectations of the children and their consistency or inconsistency in handling them.

In about 71 percent of the cases subjected to sytematic diagnostic and etiologic search, biophysical and socio-behavioral problems appeared to be intermixed. A similar survey of school children was conducted at the request of the school system. A standard screening procedure showed extensive intermixes of physical, cognitive, and social-behavioral problems. Faculty, house officers, students, paramedical personnel, teachers, families, even the patients themselves need to be educated to a high level of awareness of the way these variables intertwine and the importance of paying attention to the clues they offer. This is a big, challenging area in the teaching of the behavioral sciences.

Behavioral science principles will only be meaningful if they are presented to medical students as a normal part of the health care process and not as something extraordinary or peculiar. A central issue to success is the ability of those involved to be concerned with something beyond and bigger that their personal interests or particular disciplines.

There is no better central focus than the patient, either singly or in the aggregate, Dr. Talbot concluded. A dry lecture isn't worth a hoot. Searching for substantive ways to define what a patient has wrong with him, identifying causes and then doing something to correct the problems is a compelling kind of education.

The Biobehavioral Model of Man: Building the Conceptual Bridge

In addition to a knowledge of concrete problem-solving techniques, medical students need sound theoretical knowledge, or a model, of the nature of the human organism, said Dr. Sol Kramer, Professor of Biological Science in Psychiatry and formerly Chief of the Division of Behavioral Science at the University of Florida College of Medicine. Medical education is usually heavily oriented toward biochemistry, neurophysiology and clinical and laboratory findings. Yet medical students cannot be said to understand these areas if they do not understand how the physiological aspects of behavior and emotion can alter molecular functions. The problem, therefore, is to determine how the behavioral sciences can be brought into the kind of intimate working relationship with medicine that other basic and clinical sciences have, and how this relationship can be reflected in medical education.

The ethological model of man is one theoretical construction through which the behavioral information that medical students need can be presented. Ethology is an evolutionary approach to behavior which includes the behavioral relationships of organisms and their environment. The major interactions between man and his environment are of a social, interpersonal nature. They take place through sensory inputs into the organism, autonomic nervous system functions and neuromuscular activity—or what we commonly call "behavior." Ecologically speaking, however, adjustments to the physical environment and interpersonal, emotional behavior share many autonomic nervous system functions in common. Here we have a significant physiological bridge between the concepts of sociology and medicine which can give students a deeper understanding of behavior than the traditional descriptive approach provides.

The evolutionary biological-behavioral model of man is derived from five basic concepts and assumptions. These are:

- Fixed motor patterns operate in the human organism as well as in other animals; and innate, unlearned behavior is as much a part of human development as it is in any animal.

  Organisms are provided with opportunities for behavior through genetically determined neuromuscular coordinations which "grow" into the central nervous system during embryological development. There is an obvious "lawfulness" in the relationship between certain types of gross behavior and what goes on in the central nervous system, which we know from displacement activities, releasing mechanisms, intention movements, ambivalent responses, and so on. In studying human development, we need to consider the lawfulness of these fixed motor patterns and releasers in addition to the learning and behavior theories now used as models in teaching the behavioral sciences.
- These fixed motor patterns that we can observe in man have homologous counterparts in animals.

  In primate studies, we observe biological phenomena that determine social organization. We need to ask, how applicable is this on the human level? What light do primate studies throw on our traditional anthropological, sociological and psychological interpretations of human behavior? By going down the biological tree, we can see where such phenomena as rooting, sucking, respiratory patterns, clinging, locomotor patterns, emotional responses and coital reflexes have come from and that these have extended to the human being.
- These fixed motor patterns are inherited, but are then secondarily integrated or programmed into each individual by the ecological and social environment during human ontogeny.

  This programming modifies the behavioral, physiological and structural development of the individual and forms the basis for character structure and characteristic modes of behavior in given situations. The autonomic modifications which accompany behavioral modification provide the psychosomatic background for responses to stress, to the invasion of pathogenic organisms or other noxious agents, responses to drugs, wound healing, etc. Character structure is almost synonymous with personality, but broader than the ego structure of psychoanalysis. It emphasizes that early behaviors have "grown" into the organism with repeated experience, and have become part of the body posture, and part of the individual's movement, expressivity or rigidity, as well as his psychic structure.

- Biologically speaking, human character structure is a phenotypic modification of the individual.

  Although human beings have many similarities, they grow differently, in part, as the result of repeated early patterns of behavior. It is these phenotypic neuromuscular alterations of man's growth processes that provide the basis for characteristic modes of interpersonal behavior, and the ability of the culture or social environment to influence one's social behavior. If the balance of an individual's characterological patterns are disturbed, his interpersonal and social relationships are also disturbed.

  All of us are programmed neuromuscularly by mother-infant interaction during the early years of life. But this immediate interpersonal environment and the behavior it engenders is not an independent phenomenon. Such behavior also represents phylogenetically determined specific sensory input and behavioral output interactions upon which growth and development depend. If these are lacking in the child's environment, deficits in his development are apt to occur. A mother's ability to supply the necessary sensory stimuli depends, of course, on the influences the family, society and culture have on her, and on her capacity for relatedness. Maternal behavior can either intensify or minimize the negative impact of other influences.

  Motor patterns are always intimately related with autonomic and endocrinological functions, so when behavior is changed, autonomic and endocrine responses also change. The way behavior influences growth can be seen in the development of ringnecked doves. Normally, squabs sit for their first two or three weeks of life with their legs drawn up under their bodies. So long as this neuromuscular coordination is maintained, they grow normally. However, if they are unable to grasp some substrate during this period, their legs slip out of this position. This alters neuromuscular coordination, and the legs grow outward in an abnormal fashion.

  In human beings, phenotypic shaping forms a background for the way people respond to disease, drugs, surgery, convalescence, etc. It lies at the core not only of sociological problems but of many aspects of psychosomatic medicine, psychiatry, pediatrics, obstetrics, and even surgery. If the surgeon is faced with a depressed patient, he is faced not only with a psychological problem but a physiological one. His patient will often respond to successful surgery with depressed activity, including depressed respiration; and depressed respiration in a patient under anesthesia can lead to death or to delayed recovery. The biology of behavior, therefore, is an important focal point for both medicine and sociology.

- Cultural environment alters the growth and development of every individual.

  This alteration is not due to learning alone but is also a biological function. The ease with which man's biological, neurophysiological and endocrinological functions can be modified is seen in the production of youthful Olympic swimmers. If you start training them at an early age, you can modify their physiology to a point where they can win gold medals by the age of 14 or 15. As a result of their training or "behavior," they become structurally different, not only from other youngsters their own age but from adults who have not undergone similar training. Changes in behavior over a long period of growth lead to structural changes in the organism. Similar modifications induced by alterations of behavior during the active growth period of infancy and childhood are involved in the concept of "character structure." These modifications can have either positive or negative effects; they can contribute to disease processes. Structural adaptations resulting from environmentally induced behavioral changes are often part of pathology.

All of these concepts illustrate that it is impossible to separate behavior from growth, Dr. Kramer said. The way an organism grows depends upon how it behaves. Every bit of behavior that takes place during the period of rapid early growth is structured into the organism.

If we look at these concepts of the relationship of biology to behavior, we can begin to see what is missing in both medicine and the behavioral sciences. What is usually taught in medical schools as the biological substrate of medicine is really only half of biology. What is taught is functional biology: neurophysiology, biochemistry, pathology, microbiology, anatomy, etc. What is not taught is the other half of biology, evolutionary or ethological biology. The physician usually gets no grounding in this because it is left out of the curriculum.

The same problem is present in the way the psychiatric substrate of medicine is taught. It centers around neurophysiology, neurosurgery, pharmacology, etc. and there is little concern about development except at the theoretical level.

In the pediatric substrate of medicine, the emphasis is usually on neurology, immunology, biochemistry, growth rate, nutrition, etc. Little attention is given to emotional development except in child psychiatry. In this field, the ethological development of the child has to be considered, because the child's problems cannot be resolved without dealing with his family, his siblings, and others who influence him. His problems cannot be dealt with in terms of functional biology alone, since the ontogeny of his behavior patterns is closely linked with evolutionary biology.

We need to give medical students more examples of the extent to which interpersonal action brings about behavioral modifications which enhance or interfere with physical and psychological growth, maturation and development. Medical students need to know that as children behave differently, they grow differently. A neurotic or psychotic person is one who has grown differently from a psychologically healthier person; a problem child often grows differently in terms of integration of perceptual and motor responses than does a well adjusted child.

Even in psychoanalysis, very little of the evolutionary concept of child development is included. The emphasis is on metaphysiological concepts such as id, ego and superego functions of psychic structure. While the psychosomatic medicine serves as a bridge between medicine and psychoanalysis, the medical student must be made aware that the human infant discharges all id functions by observable patterns of behavior—sucking, clinging, smiling, crying, biting, etc. In reality there is no special branch of medicine which is psychosomatic, since all medicine is psychosomatic.

In the behavioral sciences, also, the picture is incomplete. The main emphasis is often on group behavior, but little consideration of the evolution of human or social behavior is included. Social and clinical psychology rely on a learning theory model, while also neglecting the evolution of human behavior. Sociology and anthropology provide an excellent description of what is going on in the environment of the individual, but these disciplines generally neglect important corrections between individual biological mechanisms and that environment. While the sociologist is aware of the relationship between personality and social institutions, few implications regarding personality are derived from the evolution of human behavior.

Medical students need to know that the social environment tends to reflect what happens on an individual level, and that individual behavior—juvenile delinquency, for example—often reflects the level of social organization or disorganization in the environment. We need to teach students not only that social environment is capable of influencing development and health, but also the biological mechanisms through which this is accomplished.

Physical anthropology emphasizes the evolution of human *structure*, and archeology deals with the structural remains of man's behavior, but neither pays sufficient attention to the evolution of behavior itself. Cultural anthropology, on the other hand, limits itself to studies of customs, institutions, and individual personality to some extent, but apart from giving lip service to man's behavioral evolution fails to relate these customs and institutions to man's behavioral evolution. This split in anthropological thinking leads to an overemphasis on culture, and in effect emphasizes man's discontinuity rather than continuity with his evolutionary heritage.

The split between physical and cultural anthropology is an artificial one, Dr. Kramer said. Recognizing that the skeletal-neural-muscular system is an integrated one, paleontology derives certain phylogenetic inferences about behavior from skeletal comparisons, and muscular origins and insertions. For example, from the nature of the pelvis and other skeletal articulations of Australopithicines, they are able to say that these hominids walked bipedally. These deductions are possible as a result of knowledge gleaned from the behavior, muscles and skeleton of living primates and man. These phylogenetic behavioral-muscular-skeletal interrelations are thought of as being separate from cultural anthropology, but they are not really separate, because in cultural anthropology we have to do with the way phylogenetically determined behavior patterns are programmed in each individual by the mother-infant relationship. This biosocial behavioral modification of each individual also alters his structure somewhat, i.e., gives rise to human character structure. Without this biosocial formation of human character structure, human social structure would not be possible. There is general agreement therefore that psychological elements enter into every individual's posture. Also, when an individual is depressed or emotionally disturbed, this is reflected in the way he walks, and such non-verbal communication is utilized in varying degree in all cultural systems. Phylogenetically speaking, it is through behavior that the environment selects and eventually determines the structure of species, and during ontogeny that the biosocial environment integrates these phylogenetically determined behavior patterns into human character structure. In other words there should be no real separation between physical and cultural anthropology, because a knowledge of the role of the neuromuscular system in both phylogeny and ontogeny underlies these anthropological realms of study.

In animal social behavior and organization, these ecodynamic relationships can be seen more clearly. For example, herring gulls come together at their breeding grounds in the spring for courtship and reproduction. Individuals and mating pairs are both attracted to each other and aggressive towards each other. Their attraction results in 10-15 pairs of birds building nests in a relatively confined area or "club." On the other hand, the members of a club are aggressive towards each other, and this results in the building of a number of nests in a small area, but each gull pair defends its nest vigorously. There may be a number of such clubs, spaced 75-100 feet apart, on the breeding grounds. The spacing of the nests and the clubs is a combination of behaviors determined by social and physical factors, which can be termed "ecodynamics."

In animals, it is clear that social relationships are biologically determined. While such factors as tradition, ethics, values, and morals enter into human social behavior, it is the underlying biological factors which make human society possible. Just as in animals, fixed motor patterns are very much involved in the development of human social behavior. As these behavior patterns, together with their autonomic and endocrine functions, are facilitated, over-excited, or repressed in every infant by the mother, father and siblings, they are biologically programmed into the infant, child and adult. They also involve attraction, hostility, aggression, fear, anxiety and varying patterns of defensive behavior. These ways of responding grow into the organism creating character structure. Now, however, we refer to these human interpersonal ways of behaving as "psychodynamics." Human psychodynamics is an extension of animal ecodynamics.

The principal reason for the gap in communication between the medical and behavioral sciences in medical education, Dr. Kramer said, is that the members of the different disciplines have not learned to dovetail information about the biological and behavioral functions in the way suggested by the biobehavioral model of man. The medical student, for the most part, is taught about gastrointestinal, circulatory, excretory and neural functions. Whatever descriptive ecological framework for human behavior is offered him is usually taught by behavioral scientists who present the discrete viewpoints of cultural anthropology, sociology and social and clinical psychology without relating them to what frames of reference are comprehensible to the student. Even with no knowledge of biochemistry or physiology, behavioral scientists are able to show correlations or relationships between environmental factors and aspects of health care and disease. In fact this is one of the very strong contributions behavioral scientists can make to medicine. On the other hand they often fail to integrate this material with the biological mechanisms that medical students focus upon. They present their information, instead, within the more limited framework of role and learning theory.

This is unacceptable to the student. He wants a model that will tell him more about how social influences affect biological mechanisms and how biological mechanisms affect development and personal and social behavior. If the behavioral sciences are to be meaningful to the medical student, they must reach him through the heart of the material with which he has some familiarity—that is, functional biology—and demonstrate clearly the interrelationships between this familiar material and human behavior. The important point we need to get across is that if certain phylogenetically determined human interactions are lacking, normal physiological processes will not go on and normal growth and development will be impeded.

Using Dr. Kramer's presentation as a base, the conference participants explored questions about what concepts underlie the biobehavioral model of man and how they link into the behavioral sciences and medicine; what the implications of the model are for teaching, research and patient care; how the model relates to the motivations and orientations of medical students; what its implications are for curriculum placement, administrative organization and staffing; and how it affects the relationships of the behavioral scientists in the medical school with his medical and disciplinary colleagues.

- What are the concepts underlying the model? How do they link into various behavioral science disciplines and into medicine?

This model, the participants said, is directed toward:

- reintegration of the patient
- the use of evolutionary biology as a linking conceptual framework for things that are now separated and disconnected.

The model is particularly intriguing because it is dynamic and based on behavior rather than static and based on structure and anatomy. It is unifying and integrative, and a unifying and integrative model is very much needed for certain purposes. It can supply bridges that demonstrate important interrelationships between sociology, biology and behavior. Evolutionary and ethological concepts in medical education can provide a meeting ground where traditional medical education and the behavioral sciences can come together and enrich each other. The areas of interaction between behavioral and sociological phenomena and the basic human organism can be identified within a frame of reference in which many phenomena can be described—such as the limitations and potentials of the organism and the dynamics of personality, society and cultural environment—and their interrelationships with the traditional concerns of medical students can be emphasized.

Even more important than the interrelationship or integration of biology and behavior is the fact that there are multifactorial inputs into disease and into behavior. Sometimes one factor becomes predominant, sometimes another; sometimes they are closely related, sometimes less so. But we get a much clearer picture of the situation by recognizing these many inputs than by oversimplifying and saying "pneumococcus causes pneumonia."

- What are the implications of the biobehavioral model of man for teaching, research and patient care?

This model would help to provide a system within which priorities could be established. There is a great need to establish priorities, not only to improve the quality of medical education and care in general but to provide guidelines for Federal decisions about such questions as research allocations.

The biobehavioral model would help to get medical faculty and students away from their preoccupation with disease, which would be a useful development. It would help to sensitize students to the problems of patients and the various kinds of problems physicians encounter in providing medical care.

However, we need to introduce other concept systems as well as this one in medical education, both those already existing and others yet to be devised. It should not be assumed that all information about behavior that is included in the medical curriculum must be constricted to fit within a biological model. This would be too limiting. If a sociologist, for example, can only discuss the structure of medicine, the structure of health institutions and the interpersonal relationships of people within a biological model, much other information about social structure that would be useful to medical students will have to be left out. Somewhere along the line students also need to learn about such phenomena as social class and the doctor-patient relationship. These are not very evidently implied by this model. They could be introduced to some extent within biological parameters; for example, the session on interview procedures might include information about changes in heart rate and respiration that take place during the interview and the effects of the quality of the doctor-patient relationship on these changes.

The model was seen by some members of the conference group as too deterministic. It might, they said, be difficult to apply to the day-by-day tasks of medicine. However, this model is valuable in relating medicine as a system to other social systems such as welfare, housing and human resources. By giving the medical student a point of view of what the human is all about— a unifying concept of man—we may enable him to give more adequate health care.

- How does the model of man and human behavior relate to the motivations and orientations of students?

This model is directed more toward broad-scope education of physicians than toward skill training, which the participants felt to be a point in its favor. It also has the advantage of being built on biological concepts with which all medical students will be familiar. However, some participants questioned the ability of the model to "turn students on." Its impact, they said, would probably be highly selective, with a few students responding strongly to it but the majority finding it too abstract to relate closely to their social and political concerns. When students come to medical school, they don't want to know about the evolutionary development of doves and monkeys; they want to know about people. What they are tensed up about is their first encounter with patients, and they need to have that encounter before someone starts talking to them about biobehavioral patterns. To make best use of this model, the faculty should keep its concepts clearly in mind but should present the material through the case study or expanded clinical approach.

- What is the implication of the model for curriculum placement, administrative organization and staffing?

Neither the experiential approach nor a piecemeal content approach has proved entirely satisfactory in most medical schools, the participants said. Dr. Kramer's model is intellectually and conceptually attractive. However, as presented, it would require a total overhaul of the curriculum, administrative organization and staffing of the medical schools, so it is not apt to be generally applied. If we did accept a unifying concept of this sort as the basis of medical education and made the necessary changes, it might bring about the reorganization of the health care system itself.

A number of the participants said that use of the biobehavioral model dictates a core approach to curriculum. Some felt this model could not be taught effectively even as a minimum overview in a short period of time in the basic science year but would have to extend throughout the entire curriculum. The model is so all pervasive that the groundwork for it should be laid much earlier, in college, high school, or even elementary school. Students should be imbued with the concept throughout their educational process.

At the opposite end of the scale, other participants suggested that the model of man should perhaps be presented late in the medical curriculum as one part of the total behavioral science content. The behavioral science curriculum model now used in most of the medical schools can be taught in the first year, they said; but it is difficult to present a biobehavioral model during the first year. It is easier the second year, but students are most receptive during the third year or during psychiatry residency, because by then they are ready for this integrating concept.

Other participants suggested that Dr. Kramer's model might be introduced early in the curriculum as a one month solid block of time with no other courses being taught at the same time; then reinforced throughout the rest of the curriculum in electives, strip courses and clinical experience. Used in this way, this model could provide the unifying material that ties blocks of other curriculum materials together in a meaningful way. Some participants suggested that financial support should be provided so this model can be fully tested at some medical center.

- Does the biobehavioral model of man affect the relationship between the behavioral scientists and the physician? Between the behavioral scientists in medicine and his colleagues who work exclusively in their own disciplines?

Many of the participants said that Dr. Kramer's model holds excellent potential for integrating behavioral scientists and medical people. Since it is based on both biology and behavior, it might help different disciplines to learn a common language. The principal problem in communicating behavioral science concepts to medical students is the multiplicity of terminology used in the concept systems of the social and behavioral scences. This multiplicity is confusing for medical students and for physicians because the terms overlap and compete. Since the faculty cannot seem to learn a common language, students have to become multilingual to talk to all their unilingual faculty members. This is not good; there should be some kind of Esperanto everyone could use.

The most valuable impact of the model on the relationship between the behavioral scientist and the physician would be in mutual engagement in problems of mutual interest. This should involve a two way exchange of knowledge and techniques, not merely an assumption that the physician needs to learn from the behavioral scientist.

Some participants said that the biobehavioral model would isolate behavioral scientists in medicine from their colleagues in other settings less than the clinical model, which tends to separate behavioral scientists from their disciplines of origin. Others said that behavioral scientists outside the medical setting would not be inspired by this model of man but would prefer to concentrate on problems more obviously related to their home disciplines, so the relationship between behavioral scientists within the medical setting and outside it would not be strengthened appreciably. However, one behavioral scientist pointed out that few behavioral scientists who work in health contexts have made any attempt to take a model of this sort back to their disciplinary colleagues. It would be interesting to see what would happen if they did, and whether the result would be to make the parent disciplines more biologically aware.

BEHAVIORAL SCIENCES IN MEDICAL SCHOOLS: STRUCTURAL CONSIDERATIONS

> The question is, how should the relationship between the behavioral sciences and medical education be established? . . . Some of the schools simply offer the old system in a new form, and it is nothing like what a lot of students went there to get.
>
> The teaching of behavioral sciences should not be tied to past patterns; it should look at what it is trying to accomplish and develop new experimental formats to achieve its goals.

The inclusion of behavioral sciences in medical education is moving from the status of a new concept to a clearly identifiable trend, but the manner in which they are included varies widely. Some schools have set up separate departments of behavioral sciences; others offer the behavioral sciences through some other department such as psychiatry or community health or use the "salt and pepper" approach in which behavioral scientists are scattered throughout many departments of the medical school and the university.

Each arrangement has some advantages and some hazards. Creation of separate departments involves some risk of detachment and separatism of the kind that occurs in other basic science departments. If, on the other hand, behavioral scientists hold appointments in clinical departments, care must be taken to preserve a clear, secure sense of professional identity. The third arrangement, offering joint appointments in clinical departments and university departments, should perhaps be used only if this is the pattern followed in relation to other basic sciences, some of the participants indicated. If the behavioral sciences are attached primarily to university departments, they will tend to remain fragmented, and there will be little truly interdisciplinary teaching or research.

There was no consensus among the conference participants about which administrative structure works best, although the scale seemed to tip somewhat toward favoring the separate department because:

1) this emphasizes that the behavioral sciences are basic to all medical sciences rather than relevant to only one or two areas of medicine, and
2) the behavioral scientists have fewer role identity problems, and this makes it easier to recruit and retain good staff.

However, there is no one simple answer to whether the behavioral sciences should be set up as a separate department in the medical school. This depends upon local needs, conditions in the particular school, funds, and personalities. In some schools, a separate department would tend to isolate the behavioral scientists and set them apart from the decision-making processes of the school. In others, it might have the opposite effect of giving the behavioral sciences sufficient independent status to enable members of the department to become part of the power structure.

Most medical schools are in transition, and the structures selected for the behavioral sciences should remain flexible enough to be easily changed as development progresses. It would be easy to fall into the trap of developing departments of behavioral sciences too closely modeled on traditional departmental structures at a time when these structures may already be obsolete. There is a danger that the behavioral sciences will become extremely parochial in 10 to 15 years if separate departments are set up. This is what has happened to biochemistry, anatomy and physiology. Isolated within their disciplinary structures, scientists in these fields develop a sort of tunnel vision that keeps them from seeing the realities of life or the direct applicability of what they do to the needs of society.

The medical schools should not commit themselves now to structures they will find it difficult to live with in the future. Innovation is an important part of the responsibility of the behavioral sciences in medical education. What should determine the administrative form in which the behavioral sciences are presented are the conditions of society and issues of medical care to which the behavioral sciences are relevant. The form of the department should depend upon what changes the school wants to bring about.

Offering Behavioral Sciences Through Separate Departments

Several medical schools represented at the conferences offer behavioral sciences through separate departments. Drs. Robin Badgley and DeWitt Baldwin described the structure and emphasis of their departments at the Toronto and Connecticut Medical Schools. Dr. George T. Harrell described the way that the administrative structure of the Behavioral Science Department at the Hershey Medical School grew out of its curriculum philosophy.

In setting up a new, autonomous Department of Behavioral Sciences at the University of Toronto Medical School, said its Director, Dr. Robin F. Badgley, he has kept several questions in mind:

- In attracting and holding good behavioral scientists, how do you maintain relevance to their own professional fields when they are in the unfamiliar environment of the medical school?
- How do you assure acceptance of the behavioral scientists by the medical faculty?
- How do you introduce this new discipline most effectively into the medical school curriculum, and what do you teach?

Toronto is Canada's largest university and largest medical school. The medical school has a full time faculty of 400 and an auxiliary staff of 1,000 part-time teachers. The decision to establish a separate department of behavioral sciences was based on the assumption that the behavioral sciences are equally relevant to psychiatry, preventive medicine, internal medicine, pediatrics and other fields and should therefore not be pigeon-holed under any one of them. This separate departmental identity provides a strong lever in recruiting staff. It assures people of the opportunity to work with their professional peers, and it provides open career lines for advancement. Some positions carry appointments in more than one department; Dr. Badgley, for example, is both Chairman of the Department of Behavioral Sciences and Professor of Pediatrics. Other members of the department have cross appointments in the departments of sociology, psychology, and with the major teaching hospitals. The Behavioral Science Department includes sociologists, a social psychologist, growth and development psychologist, and clinical psychologist. Cross appointments to the Department of Behavioral Sciences are being offered to members of some other departments. Senior medical residents are being pulled into teaching in some of the behavioral science seminars. This is particularly useful on topics such as interviewing and doctor-patient communication.

It is not easy for members of these many disciplines to work together harmoniously, Dr. Badgley said. Through the medical lens, they all look the same; but they are actually radically different in concepts, ideas, research approaches and personal and professional priorities. A great deal of personal adjustment is necessary in order to maintain good working relationships.

The curriculum of the medical school includes a mandatory core of behavioral sciences courses. Teaching is moving away from the traditional clinical bedside and classroom teaching toward more direct involvement in the community. Students are permitted to take anywhere from a quarter to a third of their time in electives in any field that interests them, from some aspect of medicine to Chinese archeology or French literature. Students participate in planning the curriculum, which is sufficiently open-ended to enable them to shape their training to reflect individual preferences.

The University of Connecticut is one of the few universities that has established a behavioral sciences group in a dental school, according to pediatrician-psychiatrist Dr. DeWitt C. Baldwin, Jr., Chairman of the Department of Behavioral Sciences and Community Health. The number of behavioral scientists who are working in dental research has grown very rapidly in recent years. Just a few years ago four or five people who were doing such research got together to discuss it; now nearly 100 participants attend the research meetings each year.

At Connecticut, the medical and dental schools are separate administrative entities but share a common facility, curriculum and faculty for the first two years. The original plan for the school called for two parallel programs, one called Medicine and Society and the other Dentistry and Society. Both were headed by clinicians. When Dr. Baldwin first went to Connecticut, he suggested that the two programs be combined into one basic science program. This concept was not accepted because individual leadership in the two programs created different emphases. Medicine and Society was heavily oriented toward medical care, while Dentistry and Society was heavily oriented toward the social and behavioral sciences.

The programs were reorganized, and the names were changed. The Department of Medicine and Society became the Department of Clinical Medicine and Health Care, and the Department of Dentistry and Society became the Department of Behavioral Sciences and Community Health. The focus of the two programs is very different. The Department of Clinical Medicine and Health Care is composed chiefly of clinicians engaged in primary care, with a social science component consisting of a health services research unit. This is headed by a sociologist who prefers to emphasize problems of health care organization. The Department of Behavioral Sciences and Community Health emphasizes biological-behavioral connections both in its teaching and in its research.

During the first two years, the curriculum includes blocks of basic medical science and a strip of introduction to clinical medicine. The first year curriculum includes cell biology, tissue biology, pathology, central nervous system and electives. The second year includes classic organ systems, biological structures and integrating mechanisms. Members of the behavioral sciences department are on the curriculum planning committees and are seeded throughout the subject committees who teach these courses. For example, study of the cardio-vascular system should include various factors associated with stress and personality along with the anatomy and physiology of cardiac function and disease; so behavioral scientists are drawn into teaching to provide these dimensions.

Originally growth and development was taught by a subject committee from the evolutionary viewpoint, but it tended to break into presentations of social and personality theory and physiological integration. Social and behavioral output was strongest in relation to the central nervous system and the integrating mechanisms. This approach was not entirely successful with the students, Dr. Baldwin said, because it became mainly a clinical presentation of classic growth and development and personality concepts.

The curriculum also became somewhat topheavy in its emphasis on specific skills such as interviewing and physical diagnosis. As a result, the behavioral and social sciences were presented in a less cohesive manner than was desirable. During the 1969-70 academic year, an ad hoc graduate medical committee was formed to discuss curriculum revisions. The curriculum structure was amended to increase the emphasis on behavioral science as a basic science during the first two years. Students are then expected to apply behavioral science concepts in their clinical core and clerkships. In-depth experience in particular behavioral science areas comes at the end of the first and second years—in three month research projects required of all medical students—and in the fourth year electives.

Connecticut has been attempting to recruit versatile teachers with multiple backgrounds who can bridge the gaps between the behavioral science disciplines and between the behavioral sciences and clinical medicine. Eight of the 14 members of the Department of Behavioral Sciences and Community Health have both clinical and behavioral or social science degrees; one, for example, is a clinical dentist who also has a Ph.D. in anthropology, and another is a dentist with a Ph.D. in psychology. To attract such people, Connecticut provides generous allowances of time in which they are free to pursue their own particular interests and develop professionally within their own disciplines. The work they do does not have to relate to the interests of the school in any way, or even to the health field.

Connecticut is considering the possibility of offering a biobehavioral degree in medical behavioral sciences. This could, of course, simply create one more discipline which cannot communicate any more effectively than existing disciplines, Dr. Baldwin said; but it is a concept worth testing.

As a new medical school, the Pennsylvania State University College of Medicine at Hershey has had a unique opportunity to develop an administrative structure and curriculum approaches which include a heavy emphasis on the behavioral sciences. Dr. George T. Harrell, Dean of the College, described the underlying philosophy from which the school has been created and the response it has received in the medical community and among students.

The college proceeds on the assumption that the behavioral sciences should be presented as medical sciences which are basic to all clinical disciplines, just as physiology, biochemistry and anatomy are. Training should start from a biological approach and include the study of normal growth and development: growth of personality, of emotions, and of intellect throughout the entire life span. It should cover the wide range of variability of normal development, individual variation within this wide normal range, and the differences in what constitutes normal behavior under different types of stress. Normal reactions to the physiological and psychological stresses of puberty are different from normal reactions to the stresses of family living or job situations. Reactions of boys and men to certain types of stress are often different from reactions of girls and women to similar types of stress. Group reactions, and reactions in the same individual vary at different stages of his life. The normal patterns of aging are another important area of study. Many people now live beyond the traditional three score years and ten. Thus, for the first time in history, we can begin to see aging as a normal biological phenomenon and not just as the accumulation of the effects of a series of chronic illnesses. These are the kinds of things medical students need to understand.

The question is, how can all this be taught? What needs to be included in the curriculum, how can it best be presented, and at what point in training should it be introduced?

The administrative structure and curriculum at Hershey have been developed on the assumption that behavioral sciences should be introduced at the very beginning of medical school and should extend throughout the entire four years. A key term these days is "relevance," and behavior is not only relevant to but inherent in the problems the physician will encounter in clinical practice in the community. To function fully, the physician needs to understand not only the biological implications of illness and disease but also its cultural and social impact on the family and the individual.

Most students come into medical school because they want to take care of sick people. They want to relate to people and do something dramatic to help them get well. This motivation must be considered in the way material is introduced into the curriculum. Consequently, patient care is interwoven with the curriculum from the very beginning. Students are assigned responsibility for following developments in specific families during their first week of medical school, and they become immediately involved in the problems of patient care in the community setting. These are all private patients.

The particular setting of the Pennsylvania State Medical College lends itself to this approach. Hershey is a community of only 7,000 people, with about 12,000 in the township. When the Medical School was being developed in 1965, medical care in the community was heavily oriented toward general practice. Only two physicians restricted their practice to specialities. The dean of the medical school met with the staff of the local 59-bed hospital and offered every physician in the community an opportunity to join the faculty. Certain conditions were attached, however. They had to agree to become full time faculty members with limitations on the amount of time to be spent in practice and limitations on their incomes to protect time for teaching. They had to agree to establish their offices in the medical school building so their practices would be available for teaching medical students. And they had to take one year of postgraduate training at their own expense to learn how to deal with medical students and house officers. They were advised that only full time faculty members would have admitting privileges in the teaching hospital. Only four of the physicians in the community were willing to accept these terms.

The Medical School at Hershey has three rather unusual departments, a Department of Family and Community Medicine, a Department of Behavioral Science, and a Department of Humanities. The Department of Family and Community Medicine has been organized around the practicing physicians who have had patients in the community under care for 15 years or so and who have now moved their practices into the medical school building. By 1969, medical care was being delivered to 5,000 people from 1,500 families in the community, providing opportunity for medical students to have direct experience in family and community medicine.

The creation of the medical school and the teaching hospital, which was scheduled to open in 1970, is, of course having tremendous impact on the attitudes of the residents toward medical care and their own illnesses. Under the direction of a medical sociologist in the Department of Behavioral Science, depth interviews were conducted with 3,000 families to explore their attitudes toward medical care and what their medical problems have been. This provided a wealth of data and it is hoped the survey can be followed up sequentially over a period of years to see what the impact of the institution has been.

There are many subtle factors that affect the willingness of patients to accept the recommendations of physicians for care. Cultural backgrounds, religious and other personal beliefs, and the attitudes of the family and the community are all involved; and physicians need to understand all of these. The college therefore organized a Department of Humanities which has chairs in history of science, philosophy and ethics, and religion.

Research at Hershey is viewed primarily as a teaching tool. Students are encouraged to look at problems in a community as they are seen through the eyes of a family physician, with emphasis on both the medical and behavioral components. Because the study of animals provides one of the best means of studying behavior from a biological base, the college has built an extensive animal farm. Construction was supported by a Federal grant from Health Research Facilities funds. Controlled genetic colonies of many species of animals are available for study within five minutes walking distance of the medical school building. The collection of 150 primates includes breeding colonies of macaques and squirrel monkeys. These are used both for behavioral research and perinatal and other types of research. A herd of sheep grazes on a 35 acre pasture three minutes' walk from the school. In addition to genetic aspects of behavior, many phenomena of group behavior, territoriality, aggressions, sexuality, and reactions to stress can be studied in animals, extrapolated to human behavior, and applied in patient care.

This research is valuable not only for the substantive knowledge it imparts but for the training in problem-solving techniques it supplies. What the doctor in practice does every day is see a series of patients with diagnostic or therapeutic problems. So he needs basic training in how to solve problems scientifically. The application of scientific facts and data to individual patient care is an art, but it cannot be done effectively without problem-solving skills. By the end of his second year, every student at Hershey is required to have done a problem-solving project in the collection of data. Some of them fall flat on their faces, but this is all right: they learn the difficulty of collecting dependable, reproducible data in a variable biological system.

Through this combination of approaches at Hershey, research, the humanities, behavioral science, and applications in family and community medicine are interwoven as threads which extend throughout the four years of the curriculum. The response to this curriculum approach can be judged to some extent by the numbers and kinds of applications for admission that are being received. During its first year, the medical school could accept only 40 students. It expected 300-400 applications but received 1,000. For the next class, 1,900 applied; and for the one after that, 2,300. The students come from a wide geographical range and almost without exception have received acceptances from at least two medical schools. Many have had more. A large number have degrees in the liberal arts rather than in science. There are students with degrees in engineering, social work, philosophy, English, and other subjects. Some are West Point graduates. The first 25 students accepted came from 23 different colleges.

When students are interviewed during their junior and senior years of college, the intellectual orientation of the Hershey curriculum is clearly explained to them. They are told they will be expected to elect a focus of interest, scan a problem, focus in on it, and go into depth. A third of the curriculum time is reserved for electives in order to allow each student to develop his own interests as fully as possible.

Correlation between clinical and behavioral aspects of training has worked out well, Dr. Harrell said. Primarily this is because of careful selection of faculty. In an innovative program of this kind, it is important to select faculty who will feel comfortable working in this kind of environment. It is also important to have skillful chairmen in the behavioral science, humanities and other unusual departments who can convince the members of other departments of the relevance of their role and how the different departments can work together.

There has, Dr. Harrell concluded, been no pressure either from students or faculty to move back toward the more traditional approach, nor has there been resistance or criticism from other medical schools. There has, in fact, been wide acceptance of Hershey's innovative approach.

Offering Behavioral Sciences Through a Variety of Departments

A number of participants reported on administrative structures in which the behavioral sciences are offered through a clinical department in the medical school or by the "salt and pepper" method which scatters behavioral scientists throughout many departments of the medical school, school of public health or university.

At the University of Florida College of Medicine, said Dr. Fred King, Director of its Center for Neurobiology Science, different aspects of behavior are taught in different departments. The more social aspects of behavior, including ethics, anthropology, sociology and animal social studies as they apply to human behavior are taught through the Department of Psychiatry. This department has strong ties with the Department of Sociology and, because of its interest in ecology, with the Department of Zoology. The Departments of Ophthalmology, Anatomy and Physiology also have behavioral scientists on their staffs. The neurobehavioral sciences—that is, those with a molecular emphasis—are taught through the Center for Neurobiological Sciences. This center calls on faculty from several disciplines and departments throughout the university as well as the medical school. The individuals involved include pharmacologists, anatomists, physiologists, endocrinologists, psychologists and others. The curriculum deals first with cellular and molecular biology and then with systems.

This approach, which cuts across departments and brings individuals together in new alignments is rather disconcerting to many basic scientists, Dr. King said. It places upon them demands that they have never experienced before. The medical school may eventually be reorganized around functionally or content oriented departments, but no final decision about administrative structure had been reached by the spring of 1969.

Whatever measure of success the Center for Neurobiological Science has had, Dr. King said, stems from the fact that it was not something designated from above by the medical school administration but grew out of mutual interest and respect of individuals from several departments. Participation in the center is entirely voluntary. This is most important; it is a misconception to assume that miracles of collaborative effort and creativity will emerge through arbitrary assignment of behavioral scientists representing a variety of disciplines to an administrative unit of some sort. The impetus must come from interested individuals.

What we need to do is to find ways to encourage behavioral scientists to take a real interest in biology, and to generate a deeper interest in social interaction in basic neurobiological scientists.

Each group needs to recognize that the social being and the biological organism can exist only as a continuum.

At Michigan State University, said Dr. John C. Howell, Associate Dean of the College of Human Medicine, the medical school is a new one still in process of working out problems of organization and administration within the context of a large state university. The medical school includes in its table of organization, the departments of anthropology, psychology, and sociology, which have their primary affiliation with the college of social science. Altogether, there are about 110 faculty members in these three departments, who—by virtue of their departments being jointly listed in the College of Human Medicine—are technically also faculty members of the latter college. In fact, however, the professional interests of only a small portion of those 110 behavioral scientists (perhaps one tenth) fall within the health and health-related areas, or even within the area of medical education. The chairmen of the behavioral science departments, however, sit on the executive committee of the College of Human Medicine, and various faculty members of these departments serve on some of the most influential decision-making committees of the college.

There is tremendous variation in the level of interest the members of these departments have in the medical school. For some, the principal attraction is the chance to do particular kinds of research, and teaching medical students is decidedly a secondary interest. A sociologist, for example, may be interested in association with a medical school because he wants to study the sociology of professions and the medical school is an excellent laboratory. An anthropologist may be interested in studying the health practices of a particular subculture in the area. There are, however, some individuals on the faculty whose credentials are in the social science fields but whose basic orientation and identity is strongly with the medical school, Dr. Howell said. It is hoped that this group can be increased.

A voluntary organization called the Behavioral Science Interest Group was formed to enable people of different disciplines to develop teaching and research teams centered around problems of mutual interest. This group was later designated a Subcommittee of the Standing Curriculum Committee of the college and given entire responsibility for teaching a two-year integrated sequence in human biology and behavior.

At Stanford, anthropologist Dr. Clifford R. Barnett has appointments in the Department of Pediatrics and Human Development of the medical school and the Department of Anthropology of the university. Stanford has no separate department of behavioral sciences. Although he previously felt that no separate departments of behavioral sciences should be established in medical schools, Dr. Barnett said, his experience at Stanford has convinced him that there are a number of valid reasons for establishing such departments.

First, there is the question of financing. It takes faculty time and effort to teach sociology or anthropology or psychology to medical students, and the costs should logically be supported by a department in the medical school, not by the university departments.

Second, in order to attract and retain good behavioral scientists, a school must be able to offer them a satisfactory institutional base where their relationship to medicine is understood and appreciated. A sociologist in a university department which has no interest in medical sociology, for example, will find it difficult to maintain a sense of identity and worth if he accepts a cross-appointment to teach in the medical school.

Third, students quickly perceive the value placed on various curriculum areas by the medical school and its faculty members. If they see that there is no department of behavioral sciences and that the medical school is not spending its valuable money in this way, they will sense that the behavioral sciences have low priority in their particular institution, and they will assign them low priority on their own scale of values.

Dr. Robert N. Wilson, Chairman of the Department of Mental Health of the School of Public Health in Chapel Hill, North Carolina, reported that his school follows the salt and pepper administrative model. There is no separate department of behavioral sciences; behavioral scientists are scattered throughout the entire school. There are about 20 to 25 behavioral scientists out of a total faculty of 125, which means that these people constitute a significant fraction of the faculty. They are found in the departments of epidemiology, maternal and child health, mental health, biostatistics, health education and health administration. Although many have joint appointments in the university departments of their own disciplines, their primary identification is with the School of Public Health department with which they are associated.

One reason this pattern of organization works well in Chapel Hill is that the School of Public Health has a very receptive multidisciplinary faculty which includes physicists, nurses, engineers, parasitologists, and members of many other disciplines. This means that the social and behavioral scientists are simply accepted as part of the team, not considered, as they are in some schools, an exotic breed of cat.

The student body also differs from that of a medical school, and this affects the kind of acceptance the behavioral scientists receive. The average age level of the students is higher than in schools of medicine, and most students enter the school with an applied background of several years' experience in a health department, nursing program or research project. They come in with some feel for the relevant behavioral science variables in public health work, especially those having to do with community organization and social structure. They do, however, tend to suffer from a deficient capacity for abstraction. As a result of their work experiences, their thinking is very concrete, and this sometimes presents teaching difficulties.

Teaching is community-centered, and the behavioral science aspects focus, for the most part, around concepts of personality, social role, social interaction and organization, social class stratification, leadership patterns and policy implementation mechanisms. The basic emphasis, Dr. Wilson said, is on combining health planning with broader social planning in ways that will make desirable things happen in the community.

The Power Structure of the Medical Schools

> It makes you wonder where we really are . . .Physicians (say), "Yes, we want behavioral sciences as part of the curriculum." At the same time, these power operations continue to go on. One wonders, how much does medicine really want to change?
>
> If you look at behavioral science in the medical schools in 1950, in 1955, in 1960, in 1965 and in 1970 . . . . what has occurred is extraordinary.
>
> Perhaps it is time for the behavioral scientists to stop playing the game according to rules set up by the other team.
>
> Be realistic. Attempt the impossible.

If the behavioral sciences are to be an effective force in medical education, they must talk from a position of strength. This means they must function as an integral part of the power structure through whose action fundamental changes are made.

There are several major reasons that it is important for behavioral scientists to be an active part of the power structure of the medical schools; for example:

- to enable them to meet the needs of students for high quality behavioral science knowledge

- to "protect" students who are interested in the behavioral science aspects of medicine so they will not get slaughtered by the traditional medical faculty
- to familiarize clinical and basic science faculty with behavioral science concepts
- to fill certain gaps in medical education which other disciplines prefer to avoid, such as physician-nurse relationships, interviewing, and attitudes toward death
- to conduct behavioral science research which can shed important light on medical problems
- to help bring about necessary changes in medical education, the health care system and society.

Behavioral scientists cannot fulfill any of these objectives adequately unless they participate as full members in the decision-making bodies of the schools, including committees on patient care, clinical teaching, faculty promotions, curriculum, admissions and other advisory and policymaking committees. Their activity on these committees leads to the matter-of-fact acceptance as part of the working team that behavioral scientists need to achieve.

Gaining acceptance requires a positive attitude on the part of behavioral scientists, but several participants pointed out that behavioral scientists have a tendency to sound apologetic about the quality of their data and pessimistic about the likelihood of changes taking place in the medical care system or in medical education. They have an almost confessional attitude. They tend to crumble up under criticism. This has a bad effect on their relationship with their medical colleagues and their students.

Some of the other participants felt they were simply being realistic. Both behavioral scientists and physicians are troubled by a sense of inadequacy about what they are able to achieve, they said. A profound gap exists between what they think is needed in the medical curriculum and the reality of their experience. Much of this is due to a changing level of expectations. Five years ago, the behavioral scientists may have found teaching a course in a medical school quite a successful and satisfying experience. But now he has a sense of crisis and urgency that makes him dissatisfied. He feels inadequate when measured against the needs he sees, what he would like to do, and what he knows others wish him to do. What we need to do is get hold of the relationship between what we perceive might be done and what we can actually do, and go about establishing a concrete level of performance of those things we can accomplish.

Behavioral scientists sometimes assume that their struggle to gain acceptance and positions of power in the medical structure is a problem unique to them. This is not true. Territoriality exists in all parts of the medical structure. Pediatricians, psychiatrists, surgeons, all have their own territories. No discipline wants to give up any part of its domain, so there is constant rivalry among all the disciplines. This attitude is extended to the behavioral scientist as he attempts to define his role in the medical structure. There is ever-increasing time pressure in medical education because of the massive increase in medical knowledge. The behavioral sciences must compete for time not only with the traditional medical components of the curriculum but with large areas of solid medical information not yet included in it.

The basic and clinical scientists feel that they do not have time to teach the essentials of medicine and cannot afford to share the scarce hours with the behavioral sciences. They are interested first and foremost in training students to be competent physicians. The time available to make them competent in biological systems is far too limited. If clinicians have to choose between training students for competence in biological systems or competence in social systems, they are obviously going to choose the former, because that is the area a student must master if he is to be a good physician.

The medical student is a finite vessel, and there is the question of how much we should try to pour into him. How willing students are to encompass behavioral science courses in their overburdened schedules depends, in part, on the attitudes of the clinical faculty. These attitudes are quickly passed on to the students, even though such indicators as the fact that behavioral science courses are often scheduled at times when attendance is automatically low; for example, on Saturday mornings. The low status of the behavorial science is also underscored by the traditional organization of the medical school in which the internist has more status than a psychiatrist, behavioral scientist or social worker. Behavioral scientists are usually called upon last when a case presentation is being made. The clinicians, biochemists and pharmacologists generally precede them. This should be reversed in cases where life style is the most important factor in a disease or a particular case.

In most schools, the behavioral sciences are given nothing like the emphasis given to anatomy, pathology and other traditional subjects. A student who failed one of these subjects would be put on condition and would have to repeat it, but no one pays much attention if he fails a behavioral science course. This problem is aggravated by the fact that the medical student is not well prepared to receive and value behavioral science material. He comes into medical schools primed for cell biology. He is required to take chemistry and other courses in college that prepare him for cell biology. But no similar preparation for the social and behavioral sciences is required, so he naturally assumes they are less important.

This assumption receives support if a student asks a question during a clinical presentation about family or social factors and the attending physician says, "Don't bother about that; it is not important." The student has little choice about what his own response must be. He can come later to the behavioral scientist and say, "How about this?" and some students do; but the impact of the clinician's message lingers.

These problems are being overcome to some extent in some medical schools where the behavioral sciences are integrated into the medical curriculum in a way that says to the students, "This is a legitimate point of concern of yours as you work to become a medical professional. It is a valuable part of your preparation." If the faculty believes wholeheartedly in the importance of the behavioral sciences, the students will absorb this attitude.

Behavioral scientists have to be careful not simply to accept what they are given and make do. If they are allowed less than the minimal time in the curriculum they need to do an acceptable job, they may reach a point of having to say, "This is insupportable. In this length of time I cannot do a job that I can morally justify. Anything I would do under these circumstances would be worse than nothing."

This does not mean behavioral scientists would simply pack their bags and leave. By looking at specific points of need in the system, it should be possible for them to develop a negotiating relationship. For example, it may be possible to swap a block of time for a carefully chosen set of little islands out of which a network of behavioral science concepts can be integrated into the curriculum.

The behavioral sciences need to focus on presenting what is pertinent and essential for physicians to have and must be very clear about both the substance and the quality of what they present. A lot of courses now being offered do not meet these standards. Much of what is presented is either not relevant to the student's future role as a physician or else the relevance is not made specific enough.

However, both physicians and students often look to behavioral scientists with expectations different from what they are able to deliver. They expect behavioral scientists to function as agents of social change and are displeased by the difference between what they see and what they wish behavioral scientists were.

Faculty seminars centered on what behavioral science concepts should be incorporated into medical education would be useful in stimulating realistic understanding of the behavioral sciences among house staff, clinical faculty and junior medical faculty. Acceptance is easier in new medical schools where the behavioral sciences are included from the beginning as accepted and financed parts of the institution and where behavioral scientists are included from the beginning in the major decision-making bodies. In long-established schools, it may be idealistic to try to familiarize the entire medical faculty with behavioral science approaches; but workshops directed toward this goal can be provided when new schools are being established. These should involve a two-way interchange of information. The social and behavioral sciences have much to give medicine, but medicine also has information to give the behavioral sciences.

Some participants felt other members of the conference group were entirely too defeatist about the outlook for the behavioral sciences in the medical schools. Many of the problems the behavioral sciences are facing are due to time lag, and we need to keep them in perspective. If we view what has happened in the behavioral sciences in medical schools in the past 20 years, the change has been extraordinary.

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Index

A

- Abortion, 57
- Abortion legislation discussion, experimental, 78
- Abstractions and understanding of the medically-oriented, 12
- Acceptance of behavioral scientists by medical faculty, 146, 157, 158
- Ackerman, Nathan, 84
- Admission procedures, 9
- Aging, patterns of, 149
- Agriculture, U.S. Department of, 120
- Alcoholism, 18, 57
  - behavior, and, 91
- Allocation of health resources, 9
- Ambulatory care
  - students need experience in, 37, 71
  - students' observation of, 29
- Anecdotal materials the mainstay of behavioral scientists, 33
- Animal studies at Pennsylvania College of Medicine, 151
- Anthropological research, 15
- Anthropologist and patterns of behavior, 13–14
- Anthropology, 104
  - cultural, 5
  - field work, and, 15
  - medical schools, and, iii
- Anxiety, 111, 112
- Arizona, University of, College of Medicine, 77
- Arteriosclerotic heart disease, 30
- Association for Behavioral Sciences and Medical Education, iv, 2–4
  - committees established
  - goals of, the, 3
  - information exchange, and, 3
  - meetings at regular intervals, 4
  - survey needed, 3
  - tasks of organization, 3
- Atherosclerosis, 34, 114–123
  - animal studies in, 122

Atheroschlerosis—Continued
  - biochemistry and behavior in, 122
  - cholesterol and, 115
  - cigarettes and, 116
  - circumstances in which it arises, 115
  - clinical recognition of, 115
  - culture-disease relationship, 121
  - death outside hospital, 121
  - deaths from, 115
  - disease course is short, 115
  - distribution of, 121
  - dynamics of changing life style, 121
  - environmental manipulation and, 120
  - epidemic in the U.S., 114
  - family structure and, 121
  - faulty living habits and, 117
  - foods and, 120
  - hypertension and, 116
  - life-style–technology interaction, 121
  - North Carolina study, 118
  - obesity and, 116
  - personality attributes in, 121
  - physician's advice, and, 119
  - physician's role in prevention, 120, 122
  - plumbing analogy, 115
  - political support and health improvements, 122
  - prevention, advice on, 117
  - preventive efforts and the community, 117, 118
  - process of aging, considered a, 115
  - quality of life and, 122–123
  - regional differences in death rates, 118
  - stress and, 116, 122
  - urban living and, 118
  - value system of patient and, 121
- Attitudes toward medical practice, development of, 86

B

Badgley, Robin, 145, 146
Baldwin, DeWitt C., Jr., 79, 145, 147, 149
Barton, Betty, iv, 168
Barnett, Clifford R., 25, 26, 28, 37, 154, 155
Behavior
  basic science of, the, 61
  biology, and, 10
  biology of—a focal point of medicine, 135
  changes and endocrine responses, 134
  emanating from basic needs, 45
  ethnological background of, 84
  evolution of, the, 137
  human, as it relates to medicine, 105
  laboratories, 24
  molecular functions, and, 132
  orientation, 61
  religious system, and the, 45
  unlearned, 133
Behavioral medicine emphasis, 91
Behavioral modification, 133
Behavioral problems in clinical medicine, 33
Behavioral sciences
  administrative structures, and, 152–153
  administrative structures in teaching, 144
  applied, emphasis on, 21
  areas of knowledge for physicians, 111
  as agents of social change, 6, 7
  atherosclerosis and, 114–123, 119
  background of students entering medical school, 51–52
  basic concepts of, 62
  basic to all medical sciences, are, 145
  behavioral science students entering medical subculture, 104
  biology and behavioral science relationship, 96
  brought into medical schools in 1940's, 10
  "care and feeding of behavioral scientists," 15
Behavioral sciences—Continued
  case approach to learning, the, 74
  clear pattern of inclusion not established, 11
  clerkships of students, included in, 148
  "clinical branch" of, 21
  clinical setting in the, 26
  clinician, and the, 159
  components in medical education, 103–143
  conference participants backgrounds in, 104
  confusion about, 5
  continuing education in, 65
  contributions to medical education, 5–21
  core of material for students' education?, 68
  currently in descriptive stage, 150
  curriculum guidelines needed, 3
  curriculum overload and the, 67
  curriculum requirement, a, 70
  decision-making in medical schools, and, 157
  departments in formative stages, 3
  departments of psychiatry, and, 11
  deprivation of child, in the, 123–124
  discipline—"there is no such thing," 5
  early part of century in, 20
  electives at Pennsylvania State College of Medicine, 92
  establishment of departments of, iii
  examinations and, 98, 99
  extraordinary change over past 20 years, 160
  faculty members, choosing the, 96
  financing teaching, 155
  group, defined, 26
  historical perspective of, 10–11
  identity of scientists, confusion about, 10
  inadequate teaching of, 103
  Interest Group, 154
  interviewing as a skill, 111–114
  isolation from professional colleagues, and, 19
  knowledge for the physician, 1
  lack of emphasis on, 158

Behavioral sciences—Continued
  lectures a poor medium for teaching, 78
  maximum contributions to medical education, 14–15
  medical education, and, 1, 5
    Association of, the, iv
  medical schools, in, 144–160
  medical-social issues in, 77
  medical students' contact with, and, 19–20
  medicine, and, 10
  medicine, familiarity with the culture of, 16
  models for teaching, 3
  mother–infant relationships, 89
  multiple roles in medical school, 20
  must be part of power structure of medical schools, 156
  new knowledge and, 18
  not a monolithic block of material, 69
  nursing profession, and the, 17
  offering input throughout medical education, 90–93
  partnership with physicians, and, 3
  physical arrangements in schools, and, 16
  physicians identifying with, 23–24
  "picture is incomplete," 136
  pitfall in teaching, frequent, 106
  postdoctoral studies in needed, 65
  practical knowledge of, required, 103
  pragmatic value of, 66
  psychosocial supplies, 125, 126
  questions dealt with by, 6
  relevance of, 149
  research
    discussed in several contexts, 22
    medical education, and, 22–35
    needs tabulated, 34-35
    opportunity, and, 15
  role models oriented toward, lack of, 63
  "salt and pepper" approach, the, 144, 153
  separate departments offered through, 145–152
  social change, and, 13

Behavioral sciences—Continued
  "strength, must talk from a position of," 156
  student–faculty interactions, 94
  study cases in Massachusetts, 131
  subjects relevant to medicine, 105
  taught as a basic science, 61
  teaching how to use medical skills, and, 82
  teaching methods evaluation, 93–96
  terminology, problems of, and, 142
  Test Committee, 99
  timing of courses important, 62, 63
  Toronto Medical School, in the, 146
  training concepts, and, 60
  two aspects of, 21
  two years required for effectiveness in medical education, 16
  university departments, in, 144
  unrealistic expectations of what can be achieved, 6
  variety of departments, offered through, 152–156
Behavioral scientists
  clinicians, understanding between, and, iii
  national boards examinations, and the, 98
  physician, and the, 142
  physicians, understanding between, and, 12
  range of interests and skills listed, 7–10
  "threat in medical schools," a, 12
Behaviorally-generated problems of modern medicine, 1
Biobehavioral degree a possibility?, 148
Biobehavioral model of man, 114, 132–143
  teaching and the, 140
  when should it be introduced?, 142
Biochemical and physiological processes, 106
Biological process, 62
Biologists, behavioral, 5
Biology and behavior relationships, 10
Biology, evolutionary, 139
Biology, functional, and the student, 139

"Biology—only half taught in medical schools," 135
Biophysical sciences training ratio, 45
Biosocially-trained physicians, demand for, 38
Black Panthers' approach to inner city health care, 82
Bloom, Samuel W., 86, 87, 89
Bobbitt, Joseph M., iv
Body posture, 134
Boundaries of medical education, note on, 103
Braga, Christopher, 37, 53
Braga, Tina, 54
Brain and behavior, the, 84
Brain damage, 108, 109
Brain process and functioning, 12
Brummer, Donald L., 83

C

California State Department of Health, the, 57
California, University of, School of Public Health, 118
Cardiovascular disease, 30
Cardiovascular system, stress and personality, and, 148
Career choices, factors affecting, 9
Career choices of students, guidance in, 6
"Carers and curers," 41
Caribbean Universities, Association of, the, 77
Case approach to behavioral science concepts, 74
Case presentation in medical education, 74
Case reports by students, 89
Causation, web of, disease and the, 123
Change, responsibility for, 14
Changes needed for an effective health care system, 4
Character structure, human, 134
Chelmsford Medical Associates, 36
Child abuse, 18
Child deprivation example, 123–124
Child development and psychological isolation, 25, 26
Child development study group at Stanford, 26
Child-rearing practices, 23
Children, day care for, 40–41
Children placed in pigeon holes, 108
Cholesterol and atherosclerosis, 115
Cigarette habit, the, 116
Clerkships in community medicine, 89
Climate and development, 23
Clinical medicine, behavioral problems in, 33
Clinical model, expansion of, 86–90
Clinical model of man and the biobehavioral model, 143
Clinics, outpatient, 29
Cole, Ralph E., 36, 52, 53
Collaborative thinking about behavioral sciences in medical education, 2
Commitment, professional, distortion of, 19
Committees established for ABSME, 3
Communication gap between physicians and behavioral scientists, 18
Communication overload in medical schools, 66
Communication skill, 8
Communication skill, interviewing a, 112
Communications skill development, 80
Community agencies and the physician, 72
Community control of health center, 54, 55
Community health program, a model, 59
Community health programs, medical students in, 43
Community medicine, 9
  as a major educational subject, 59
  departments, 2
  students and, 43–44
Community organization, 21
Community pride in clinic, 55
Community resources, 113
Community, the, and atherosclerosis prevention, 118
Comparative behavior knowledge available, 110
Competence of students, evaluation of, 96–102
Compliance of patients, 151

Components of curricula considered, 103–104
Components of health and illness, behavioral, 2
Computers, learning the use of, 64
Conceptual bridge, building the, 132
Conferences
  carrying forward the goals of, iv
  dates of, iii
  focus of, 1-4
  funding of, iv
  multidisciplinary group at, 1
  outstanding level of productivity of, 2
  participants listed, 161–168
  venues of, iv
"Confinement," historical concept of, 48
Connecticut, University of, Department of Behavioral Sciences and Community Health, 79, 145, 147
Content areas, three, 114
Contributions that should be made by behavioral sciences to medical education, 1
Core concepts and areas of knowledge, 104–111
Coronary disease and risk factors, 24
Coronary disease precursors modification, 34
Coronary-prone behavior patterns, 119
Country doctors, 81
Cross-cultural anthropological field studies, 23
Cross-cultural comparisons in anthropological research, 15–16
Cross-cultural perspective of program at University of Miami, 77
Cultural signs in medical practice, 9
Curriculum committee at Mount Sinai School of Medicine, 86
Curriculum placement and the model of man, 141
Curriculum models, some, 76
Curriculum—what to include and what to exclude?, 103

D

Data collection problem-solving, 151–152
Data used by physicians and behavioral scientists, 33, 34
Day care for children, 40–41
Death and grief, dealing with, 80
Death, attitudes toward, 157
Decision-making at Salud Health Center, 54
Decision-making in health care, 9
"Decorator syndrome, the," 13
Dental clinic referral, 55
Dental health, needs study, 80
Depressed patient, the, 135
Deprivation, dietary, 129–130
Deprivation, maternal, 111
Deprivation, psychosocial, 74
Deprived infants and physicians' time, 43
Developmental problems encountered by physicians, 7
Diagnostic techniques, inadequate, 37
Dichotomy between physicians, 53
Diet and development, 23
Disabilities, chronic, children in two groups, 124–125
Disease and how society treats it, 7
Disease causation and behavioral science, 10
Disease concept, the, 109
Disease concept, "move beyond the," 7
Disease-oriented medical education curriculum, 2
Disease-resisting resources, 36
Disease to health, medical emphasis changing, 18
Diseases and social conditions, 8
Diseases, today's killer diseases, 37
Distortion of professional commitment, 19
Diversity of education reflects diversity of culture, 45
Doctoral degrees in nursing, 17
Doctor–patient relationships, 140, 141
Drug abuse, 18
Drug addiction, 57
Drug addiction and behavior, 91
Drugs, responses to, 133

E

Ecodynamic relationships, 138
Ecological consequences of population growth and change, 8

Ecological overview, the, 83–86
Ecological picture, the total, 106
Ecology, human, 83, 104
Economic system and behaviors, 45
Economics, medical, 104
Economics of health care discussions, 79
Economics of Salud Health Center, 56
Economists, medical, 5
Education, medical, shortcomings of, iii
Educational process, 60–102
Educators' uncertainty regarding physicians in practice, 1
Elective curricula
  see also medical education
  in behavioral sciences, advantages of, 66
Embryological development and behavior, 133
Emergency room experience of students, 81
Emotion and molecular functions, 132
Emotional hazards of mother–child separation, 26
Empathy and sympathy, 112
Employment of patients in outpatient clinic study, 31
Endocrine responses and behavior change, 134
Endocrinology and metabolism, pediatric, 123
Enrollment and applications at Pennsylvania College of Medicine, 152
Entrepreneurial medical specialty group, 23
Environment
  behavior, and, 46
  cultural, 135
  internal organic, 86
  outpatient clinic study, and, 31
Environmental opportunity and genetic differences, 108
Epidemiological studies, 22, 34
Epidemiology, 87
  public health departments, and, 2
Episodic illnesses and the traditional role of the physician, 37
Evaluation of teaching methods in behavioral sciences, 93–96
Evolutionary and cross-culture emphasis, 77
Evolutionary processes, 7
Experiences of conferences participants, 2
Experiential approach, the, 71–76
Experiment in total health care, 54
Experimental formats for teaching required, 144

F

Factory–hospital analogy, 48–49
Faculty appointments in medical schools, iii
Faculty–student relationships, organization of, 13
Fads and fashions in health services, 9
Failures rationalized to prove hypotheses, 32
Family and Community Medicine, Department of, 150
Family, descriptive analyses of, by student, 88
Family dynamics, 7
Family size the determinant in fee-paying at Salud, 55
Family, the, and medical education, 80
"Fat men have fat wives," 116
Flexible curricula in medical schools, 66–70
Florida, anthropological research in, 15–16
Florida, University of, College of Medicine, 132, 153
Folk beliefs affecting health care, 58
Folk definitions of health and illness, 7
Food and Drug Administration, 120
Foods with fat listed, 120
Force-feeding approach to medical education, 60
Formal taxonomy of behavioral scientists not needed, 5
Framingham study of NHLI, 24, 115, 117
Functional overlay of minor diseases, 38

G

Genetic differences and no equality of environmental opportunity, 108
Genetics, 23
Greene, Mark, 71
Group dynamics, 70
Group interviewing, 112
  see also Interviewing
Group practice hourly costs of physicians, 53
Growth and development, studies on, 83–84

H

Harmonious working relationships, 14–21
Harrell, George T., 145, 149, 152
Harrisburg Hospital, Harrisburg, Pennsylvania, 92
Harvard University Medical School, 28, 123
Harvard University's Dr. John M. Whiting, 23
Health and social problems, 15
Health and Society course at University of Kentucky, 51
Health, behavioral components of, 2
Health care
  ambulatory care training, 37
  changing patterns of, 1, 36–59
  comparative models for programs, 33
  economics of, 79
  emotional response, and, 33
  environmental factors and, 139
  evaluation of new approaches needed, 35
  innovative, and the student, 38
  in-patient care represents a cultural lag, 36
  institutional process, as an, 45–52
  medical social organization, and, 15
personnel—development of new types, 35
  programs and formal studies, 32
  program evaluation, 22
  programs evaluated pragmatically, 33
  projects and social intelligence, 32
Health care—Continued
  systems—hospital system needs study, 49
  systems organization, 9
  time distribution, 81
  total health-care center, 53–59
  "ugly urban slum hospitals," 33
Health needs of society, what are they?, 79
Health problems,
  issues creating, 43
Health-related power structures, changes in, 9
Health resources of society, 79
Health-science education, 40
Health-science education as a new entity, 60
Health-seeking behaviors, 7
Health services, improved management of, iii
Heart and Lung Institute, National, 115
Heart disease and social factors, 24
  see also Atherosclerosis
Herring gulls' social behavior and organization, 138
High-school students in health care programs, 57–58
Historical perspective of behavioral sciences, 10–11
Home environment in patient care, 17
Hospital-care system needs study, 49
Hospital–factory analogy, 48–49
Hospital patients have little influence, 48
Hospital, the
  beginnings of, 48
  "oriented toward the medical staff not patients," 13
  patient–worker relationships in, 49
  students' experiences as patients in, 73
  subsystem, a, 47
Hospitalization, process of, the, 47
House calls, 52
Housepainter analogy, 12–13
Housing problems and health care, 57
Howell, John C., 154
Human beings—how they act is research-based knowledge, 15

Human biology and the behavioral sciences, 11
Human deprivation and observable realities, 123–132
Human health, aspects of, iii
Human ecology, 62
Human individual relationships, 87
Human Medicine, College of, Michigan State University, 154
Human organism, knowledge of needed, 132
Human phenomenon probability curve, 38
Human response to illness, 51
Human social organization and individual responses to disease processes, 8
Humanities, inclusion in medical education, 5
Humanization, 12
Hypercholesteremia and atherosclerosis, 116
Hypertension prevalency in rural and urban areas, 25

I

Illegitimacy as an example of behavioral scientists' thinking, 12
Illness
  alternative responses to, 46
  behavioral components of, 2
Individualization of medical curriculum, 2
Individualizing medical education, 66–71
Infant stress and human growth, 23
Infections in nursery in Stanford study, 27
Information-exchange clearing house, mechanisms for, 3
Information transmission patterns, 23
In-patient care represents a cultural lag, 36
Institutional process, health care as an, 45–52
Interdisciplinary discussions, 78
Interdisciplinary understanding, gaps in, 11–14
Interests and skills of behavioral scientists, 7–10
Interpersonal action and behavioral modifications, 136
Interpersonal exchange, examples of, 125
Interview
  heart-rate changes during, 141
  respiration changes during, 141
Interviewing, 84, 85, 157
  behavioral science skill, as a, 111–114
  group, 112
  pairs, in, 113
  skill to be mastered, a, 103
  student's feelings about it, and the, 111
  traumatic for students, 113
Intoxication, psychosocial, 125

J

Johns Hopkins School of Hygiene and Public Health, 24
Johns Hopkins School of Medicine, The, 24
Judson, Leona, 37, 53
Juvenile delinquency, 137

K

Kannel, William B., 24, 114, 115
Kansas, University of, 29
Kennedy, Donald A., iii, iv
Kentucky, University of, 51
  College of Medicine, 36, 61
Kickbacks, 72
King, Fred, 153
Knowledge
  and practice, dichotomy between, 14
  areas of, and core concepts, 104–111
  creating new behavioral scientists, 17–18
  power, as, 14
  synthesizing a faculty responsibility, 105
  truth or beauty, as, 14
Kramer, Sol, iv, 132, 137, 139, 141, 142
Krebs cycle, the, 106

L

Learning, direct, 71
Learning disabilities, 25

Lewis, Charles E., iv, 28, 29, 31, 32, 37
Living habits, faulty, atherosclerosis and, 117

M

Major-minor approach in medical education desirable, 67
Malnutrition, example of socioeconomic problem, 41
Malnutrition, psychosocial, 124, 128
Man, a unifying concept of, 51
Mandate of NICHD, iii
Manpower scarcity, physician, 41
Massachusetts General Hospital, 123, 131
Maternal-infant relationships, research design in a study of, 25–28
Mauksch, Hans O., iv, 36, 50, 79, 80, 82
MCAT test, the, 97–98
MediCal, 55, 56
Medical advances and quality of life, 122
Medical and dental schools with common faculty, 147
Medical anthropology, 20
Medical associations' competitive attitudes, 53
Medical-behavioral problems, 32
Medical-behavioral scientists, 19
Medical care,
  changing roles in delivery of, 28–32
  delivery course in New England, 53
  social system, as a, 35
  time distribution, 81
Medical curriculum must be individualized, 2
Medical economists, 5
Medical interviewing, 84, 85
  see also Interviewing
Medical organization, 51
Medical problems and social change, 2
Medical school
  definition, 37
  definition of needs enlarging, 45
  faculties frustrated, 14
  power structures, 16
  joint faculty appointments in, iii
Medical school—Continued
  knowledge of practicing physicians, and, 1
  social and cultural values, 10
Medical-social issues, exploration of, 77–79
Medical-social problems, 4
Medical sociology, 20, 71
Medical status of patient factors affecting, 61
Medical students' and behavioral science information, 7
Medical students at Salud Health Center, 58
Medical students' role models, 19
Medicine
  applied, 10
  behavioral sciences, and the, 10
  does it want to change?, 156
  emphasis changes from disease to health, 18
  in practice and as taught in school are different, 73
  other social institutions relationships, and, 42
Mensh, Ivan N., iv
"Mental health oversold as a cure-all," 6
Mental illness and behavior variation," 11
Methadone, 57
Methodologies study by medical student, 72
Miami, University of, 77
Michigan, University of, 154
  Institute of, 61
Military system and behaviors, 45
Missouri, University of, School of Medicine, 36, 79
Molecular functions altered by behavior and emotion, 132
Morbidity and mortality, 8
Mother and child, physicians' advice, and, 34
Mother-child interaction study,
  problems in, 27
  some findings in, 28
  students interested in, 28
Mother-child relationships, and early separation, 23

Mothers' health and related factors, 107
Motor patterns and autonomic functions, 134
Motor patterns, fixed in human behavior, 133, 138
Mount Sinai School of Medicine, 86
Moynihan Report, the, 89, 90
Medical education
  behavioral science components of, 103–143
  behavioral science input throughout, 90–93
  behavioral science research, and, 22–35
  behavioral sciences, and the, 11
  behavioral sciences contributions to, methods of, 5–21
  behavioral sciences curricula must be flexible, 55
  biopsychological emphasis in, 61
  boundaries of, defined, 103
  budgetary disadvantages in, 70
  "cafeteria" approach, the, 64
  case presentation in, 74
  changing health patterns, and, 1, 2, 36–59
  clerkships in, 89
  clinical experience in, 74
  communication overload in, 66
  continuing education in behavioral sciences, 65
  current shortcomings of, iii
  curricula differing in different schools, 69
  curricula overlap in, 68
  curriculum design, 60
  curriculum models, 76
  curriculum objectives listed, 50
  descriptive analyses of family in, 88
  development of student potential, 68
  direct learning trend in, 71
  direct student experience needed, 75
  doctor–doctor panel in, 85
  early experience and socially-oriented medicine, 76
  educational process, 60–102
  educators and behavioral scientists conferences, iii
Medical education—Continued
  elective curriculum's disadvantages, 70
  emergency room experience in, 81
  emphases in, 61
  emphasis on independent study, 79
  evaluation methods criticized, 97
  experiential approach to, 71–76
  family, the, and, 80
  force-feeding approach, 60
  health science education as a new entity, 60
  hospitalized patients, and, 71
  humanities, inclusion in, 5
  improvement of, 10
  individualizing, 66–71
  innovative community programs and, 44
  interviewing patients in, 84, 85
  methods, 60
  modifications in for physician's expanded role, 40
  needs to be responsive, 50
  outpatient clinic in, 73
  overloaded curriculum, the, 66
  overview approach, the, 64
  physical examination teaching basic, 69
  physicians and the behavioral sciences, 23–24
  practice and teaching of medicine differ, 73
  practicing medicine, and, 58
  priorities in, 43, 63, 64
  problem-solving approach, the, 79
  psychological theory in, 64
  purpose of medical schools, 70
  resident interviews in, 80
  "retreats" in, 65
  scope too narrow, 37
  selection procedures, and, 69
  social context of patients, and, 58
  sociological theory in, 64
  socio-cultural emphasis in, 61
  Student Health Organization in, 75
  students' experience as hospital patients, 73
  subspecialities at University of Miami, 77
  team approach in medical care, 85
  three options in, 64

Medical Education—Continued
  tracking system desirable in, 67
  up-to-date material essential in, 74
  variety of student approaches in, 67
  verbal feedback mechanism in, 90
Multiple choice approach to student examination, 97
Multipractice group in Chelmsford, Massachusetts, 52
Multipractice specialty group, the, 52–53
  study of by student, 72

N

National Medical Boards
  examinations, 96–97
  proposals regarding, 99, 100, 101
  suggested abolishment, 100
Neurobehavioral sciences teaching in Florida, 153
Neuromuscular programming, 134
NICHD, conferences and, iii
Non-acceptance and psychosocial deprivation, 128–129
Normality and health, 18
North Carolina coronary death study, 118
North Carolina, School of Public Health at Chapel Hill, 155
Nurse–care at outpatient clinic, responses of patients, 31
Nurse–clinicians, use of, 28-32
Nursery-care techniques
  the 1920's, in 33
  togetherness, 33
Nursing and the outpatient clinic, 29, 30
Nursing, doctoral degrees in, 17
Nursing profession and the behavioral sciences, 17
Nutrition, 57
  social, 127

O

Obesity, 57
  atherosclerosis, and, 116
Obstetricians and pediatricians' advice to mothers, 34
Olmsted, Richard W., iii, iv
Ontogeny, human, and fixed motor patterns, 133
Organism growth and behavior, 135
Organization pattern at Chapel Hill, N.C., 155
Outpatient clinic, experiences in, 73
Outpatient clinics, care of patient in, 29

P

Paramedical services coordination, 58
Parental overprotectiveness, rebellion against, 128
Participants holding joint appointments in universities and medical schools, 2
Participants in conferences, list of, 161–168
Participants in conferences, specialities of, listed, 2
Pathology, behavioral, 109
Patient, the
  "as the consumer," 108
  characteristics of, 6
  compliance in outpatient study, 31
  host of disease, as, 87
  human being, a, 7
  managed by nurses, 29
  noncompliance, 8
  Patient care
    behavioral scientists involved directly in, 17
    communication, a function of, 47
    improvement, 29
  patient–physician relationships, 63
  patient-professional, interrelationships, 8
  patient–worker relationships in hospitals, 49
  reintegration of the, 139
  social and emotional history of, 61
Pattishall, Evan G., iv, 90, 93, 99
Pediatric clinic and testing behavioral sciences, 93
Pediatric substrate of medicine, emphasis in teaching, 136
Pediatrician and the psychiatrist, 126
Pediatrics
  behavioral components of, 62
  human development departments, and, 2

Peer group status, 16
Pennsylvania State University College of Medicine, 61, 149, 150
  Department of Behavioral Science, 90
"People are nothing but bodies," 11
Personality and social institutions, 136
Personnel, trained, misuse of, 46
Pesticides, the effects of, 57
Phenotypic shaping, 134
Phylogenetic-behavioral interrelations, 137
Physician, the
  as an entrepreneur capitalist, 52
  behavioral scientists, understanding between, 12
  biosocially trained, demand for, 38
  changing role of, 36
  clinical in outlook, 63
  complex problems, and, iii
  dichotomy between physicians, 53
  education must include behavioral skills, 5
  extra-medical influence of, 8
  main function of, 36
  makes the decisions, 18
  new type, definition, 38
  participant–observer, as, 8
  position in the hospital, his, 48
  Renaissance man, a, 1
  requested definition of "good physician," 107
  requirements of a good, 6
  social problems, and, 4
  trained for management responsibility, 39
  manpower scarcity, 41
  nurse relationships, 157
  patient relationships, 51
  surgeons, and; what do they need to know?, 1
"Physicians cannot function from an isolated base," 5
"Physicians do not want their weaknesses exposed," 13
Physicians' partnership with behavioral scientists, 3
Physician's role a changing reality, 87
Physicians unfamiliar with behavioral sciences, 18
Physiological and biological data predictable curve, 38
Pitcairn, Donald M., iv
Pneumonia in a child, and his other problems, 109
Political motivation, students with, 44
Politicians, how to influence them?, 43
Population growth and change, 8
Posture affected by psychological elements, 137
Poverty and disease, 70
Poverty, children affected by, 107, 108
Poverty cycle, the, 107
Power in knowledge, 14
Power structure of medical schools, 98, 156–160
Practicing physicians and community services, 72
Pragmatic approach to curriculum content, 107
Pragmatic value of behavioral sciences courses, 66
Precursors of disease, coping with the, 117
Premature infants, 25
Premature nursery conditions in Stanford study, 26
Prematurity, 108
Prescription-writing, 72
Prevention rather than cure, 37
Preventive health care, 7
Primate studies and social organization, 133
Problems, behavioral and medical, 109, 110
Problems of modern medicine behaviorally-generated, 1
Problems of people, behavioral factors of, 107
Process, educational, 60–102
Productivity of conferences, 2
Professional isolation a problem, 19
Professions, behavior of the various, 50
Program evaluation, 32–35
Programming, neuromuscular, 134
Psychiatric epidemiology, 104
Psychiatry, 2, 62
  comment on how it is taught, 136

Psychiatry—Continued
  departments of behavioral scientists in, 11
  evolution of, 10
Psychoanalysis, 136
Psychodynamics, 138
Psychological elements and posture, 137
Psychological isolation and child development, 25, 26
Psychological patterns study, 118
Psychological status of patient and the physician, 39
Psychologists, 5
  clinical, 12
Psychology and medical schools, iii
Psychophysiology, 70
Psychosomatic medicine, 136
Psychosomatic problems, 38
Psychosocial interaction, 111
Psychosocial intoxication, 125
Psychosocial malnutrition, 124, 125
Psychosocial supplies, 125, 126
Public health and community problems, 42
Public Health, School of, at Chapel Hill, N.C., 155

Q

Questions dealt with by behavioral scientists, 6

R

Rational assumptions in curriculum development, 105
Reeder, Leo G., iv
Realities, observable, human deprivation and, 123–132
Recreation system and behaviors, 45
Religious system and behaviors, 45
Renaissance man, the physician a, 1
Reorganization of medical education curricula, 67, 68
Reorientation of medical schools, 45
Research
  allocations, 140
  anthropological, 15
  data and program evaluation validity assurance, 32–35
  data, hard and soft, 32

Research—Continued
  design in study of maternal-infant relationships, 25–28
  essential contribution of behavioral sciences, the, 22
  medically-related, 5
  methodology at medical schools, 24
  needs at medical schools, 24
  needs tabulated, 34–35
  opportunity for, needed by behavioral scientists, 15
  program in behavioral sciences, 65
  teaching tool, as a, 151
Resources, health-care allocation of, 47
Respiratory pathology and behavior, 91
"Revolt against poor teachers," 95
"Revolutionize medical distribution," 106
Role models of medical students, 19
Russell Sage Foundation, The, 11

S

Salary control at Salud Center, 56
Salud Health Center, 37, 53, 54
San Diego School of Medicine, University of California, 114
Selection procedures in medical schools, 69
Seminars, students respond to, 51
Sexual behavior, human, 84
Sexuality and sexual problems discussions, 87–88
Sexuality knowledge important to physicians, 111
Shaping, 92, 93
  phenotypic, 134
Sick child placed under restrictions, 128
Skeletal growth of children, 23
Slum hospitals, 33
Specialities of conferences participants, 2
Specialty group, the multipractice, 52–53
Social and behavioral sciences and health-service management, iii
Social and economic problem example, 41

Social awareness in students, 65
Social change
  behavioral scientists and, 6, 7, 21, 160
  behavioral scientists are agents of, 13
  medical problems, and, 2
  physician, and the, 40, 42
Social class, 140
Social conditions and diseases, 8
Social expectations, 111
Social factors and heart disease, 24
Social group and environment as a unit of analysis, 7
Social malnutrition, 35 cases at Massachusetts General Hospital, 131
Social-medical issues exploration, 77–79
Social nutrition, child's response to, 127
Social perspectives departments, 2
Social problems and health, 15
Social problems and physicians, 4
Social processes increasing risk of disease, 35
"Social scientist" and "behavioral scientist" terms interchangeable, 5
Social status of patient and the physician, 39
Social system, medical care as a, 35
Social systems, behavioral scientists students of, 16
Socialization concepts, 111
"Socially-concerned students make best physicians," 44
Society, dealing with chronic problems of, 43
Socioeconomic problems and physicians, 42
Sociological aspects of health and disease, 83
Sociologists, 5
Sociologist's findings in a medical school, 14
Sociology and medical schools, iii
Sociology of medicine, the, 104
Soft data used by physicians, 34
Stainbrook, Edward J., iv
Stanford University, 25, 154
State Boards of Examination, 98
Statistical associations and medical problems, 8
Steering committee elected for ABSME, 3
Stokes, Joseph, III, iv, 114, 119
"Stop building fancy new medical buildings," 36
Straus, Robert, 36, 49, 51
Stress
  atherosclerosis, 116, 122
  infant, 22, 23
  normal behavior under, 149
  reactions to, differing, 116
Structural adaptations and environmentally-induced behavior changes, 135
Structural considerations regarding behavioral sciences in medical schools, 144–160
Student, the
  choice in curricula, his, 66
  competence evaluation, 96–102
  conferences participants, as, 104
  evaluation of, 102
    methods criticized
  health organization projects, 75
  later career, and his, 2, 6
  receptivity to instruction, 13
  student–faculty interactions, 94
  students and the model of man and behavior, 141
  students' behavioral science backgrounds, 51–52
  students demanding subject emphases, 106
  students—educating for changing role of physician, 37
  students given a broader understanding of physician's role, 22
  students, medical, and future responsibilities, iii
  students' motivation for entering medical school, 150
  students, practicing physicians, with, 71
  students, relationships with patients, and, 9
  students, rural health care, and, 59
  students should be involved in studies, 32

Student, the—Continued
  students working as part of anthropological field teams, 24
Study on outpatient clinic care, 29–32
Sudden death victim in atherosclerosis, 116
Suicides and accidents, 37
Surgeons and physicians—what do they need to know? 1
Survey of behavioral sciences presented in North American medical schools, 3
Syme, S. Leonard, 24, 114, 118
Sympathy and empathy, 112
Symptoms, magnitudinous, 37
Systems theory and the health industry, 50

T

Talbot, Nathan B., iv, 123, 125, 126, 127, 130, 132
Teachers with dual qualifications at Connecticut, 148
Teaching contact with medical students, 20
Teaching is a moral obligation, 95
Teaching quality, the importance of, 66
Terminology in the behavioral sciences, 142
Terms for joining faculty at Pennsylvania College of Medicine, 150
Territoriality in medical structure, 158
Therapeutic response a diagnostic tool, 130
Time and motion studies in outpatient clinic, 30
Toronto Medical School, University of Toronto, 145, 146, 147
Total health care center, the, 53–59
Total health effort still being avoided by medicine, 4
Tracking system in medical education desirable, 67
Training for the new-type physician, 38, 39
Transportation and health care, 57
Travel for medical care, resistance to, 56
Treatment defined, 17
Tufts Medical School, 71

U

Uncertainty of the educators, 1
Understanding, gaps in, 12
Understanding is a dual responsibility, 18
Urbanization and atherosclerosis, 118

V

Variables in patient care and behavioral science concepts, 28
Virginia, Medical College of, 83

W

Weed, Lawrence, 109
Weidman, Hazel H., 77
Wells, Leora Wood, iv
Western Reserve Plan, the, 86
"White coat syndrome," 17
White, Paul, 24
Whiting, John M., 23
Willey, Richard R., 77
Wilson, Robert N., 155, 156
Woodville, California, Salud Health Center, 53, 54
Wound healing, 133

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